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- BERT SPENCER – GRESLEY'S MASTER ENGINEER
- THE RAILWAYS OF HALIFAX
- STEAM AT BRIGHTON IN COLOUR
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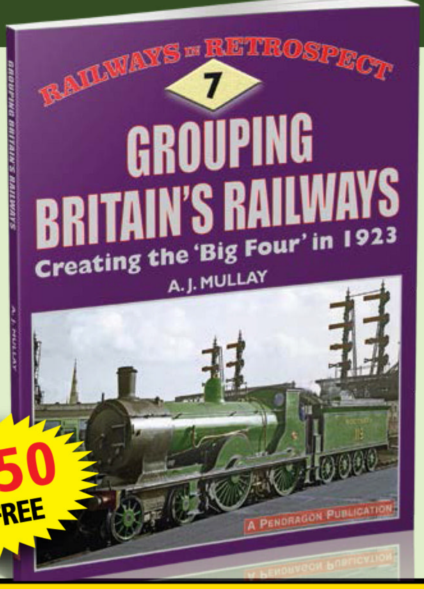

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Editorial
BackTrack
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APRIL 2023
RECORDING THE HISTORY OF BRITAIN'S RAILWAYS

The powers behind the thrones

One thing which has come out of the murk of the political underworld in recent years has been the reluctant emergence into the half light of a range of operators – influencers, policy formers, kitchen cabinets, lavender notepaper writers, economic gurus and special advisers (such as on ethics, for heaven's sake) who, whilst unelected to a man or woman, have the ear of the top tiers of the great and the not so good of the Parliamentary green benches. They have probably been there, unnoticed, for many years until the more investigative journalists of current times revealed and named the string-pullers, dark arts manipulators and those who needed their eyes testing in County Durham market towns during lockdowns. Shady, often unknown and unanswerable to the public, they worm their way into the system and establish their enclaves until they are unmasked by the press or fall out with their patrons, or are fallen out with, and then go 'rogue', spilling beans all over the place as they run for the money. This they can do as not being formally appointed to official positions, they are not bound by the Official Secrets Act – as I still am 25 years after leaving the public service. In fact, I'm probably in breach of it by disclosing that much. I should say no more, for fear of answering a knock on the door to find unsmiling men from the Ministry of Certain Things in dark coats and turned-up collars, asking if they might come in without waiting for an answer.

When the scribes of the future chronicle the wheelings and dealings in the obscure cubby-holes of politics we might learn more about the actual extent of the influence of this motley rag-bag of *éminences grise*. However, we should also recognise that the work of back room players has never been confined to just the corridors of power. Many a great composer, having thought of a good tune, would take on an arranger to make his music fit for a full orchestra: the toots of the trumpet and the tinkles of the triangle and so on. Editors (bless 'em), script advisers and technical consultants of one sort or another have contributed their own specialisms to making literary, theatrical and film productions more suitable for presentation to the general public.

Years ago, when the world and I were younger, I became aware of 'Gresley locomotives' and 'Stanier locomotives' and vaguely imagined these distinguished men sitting at their drawing boards, designing their locomotives in shape and detail and then sending their plans down to the workshops with an instruction to 'build 35 of these'. This, of course, was cloud cuckoo land and in time I came to realise that the works were full of skilled draughtsmen and technicians with expertise on every aspect of locomotive design – boilers, cylinders, valve gear, whatever, all coming to bear upon the ultimate product. These people were unrecognised outside their workplaces, yet in practical terms they were behind the bringing into existence of so many of our best-known locomotive classes and were fundamental in the unfolding of locomotive history.

In *Backtrack* we have sought to identify these design practitioners and in the long-running 'Reflections' series by Michael Rutherford and in articles by other authors many of those behind-the-scenes engineers have been brought to our cognisance. As a result we now know more about the innovations, modifications and improvements in which they had such influential involvement.

In this context two names in particular spring to my mind – Tommy Coleman on the LMS and Bert Spencer on the LNER. Coleman was the subject of one of Mr. Rutherford's articles as far back as October 1996 in which he described how Coleman, commissioned to produce a streamlined version for the next batch of modified 'Princess Royal' Pacifics, managed (in Stanier's absence in India) to draw up a completely new design which became the "Coronations' before which we now bow down. The writer portrays him as "arguably the greatest of the railway company locomotive engineers from the grouping to the end of steam".

On the LNER Spencer was filling the role of special assistant to Sir Nigel Gresley at the time of the development of the A1 and A4 Pacifics and the story of his invaluable part in the company's motive power evolution is told in *BT* this month by Tim Hillier-Graves, describing Spencer as 'Gresley's Master Engineer'. Neither Coleman nor Spencer sought the spotlight or any form of personal glory, yet quietly and expertly they performed great work. Shadowy back room players, then, can be machiavellian self-seekers or esteemed members of a fine supporting ensemble: attribute adjectives to them as you see fit.

*****

The *Railway Observer*, house magazine of the Railway Correspondence & Travel Society, has long been quoted by authors as a source of information for their articles. Indeed its predecessor was first published in 1928 and the series now runs to over 1,100 editions, this being sent free to members. The Society has embarked on a project to digitise its back catalogue of publications and the first of these, the LNER green guides, were the subject of a recent article in *BT*. The *RO* was the next project and all issues from 1928 to 2003 are now accessible for everyone in digital format at no cost at www.rcts.org.uk

*****

To conclude, just a last reminder that the 2023 magazine casebinding season is coming to an end and you need to get your magazines to us – any year, any quantity – by the end of March. Details of how to do so can be found on the inside back cover.

Michael Blakemore

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A1X 'Terrier' 0-6-0T No.DS377 at Brighton in 1958, repainted in London, Brighton & South Coast Railway livery for use as works pilot. (Colour-Rail.com BRS1326)

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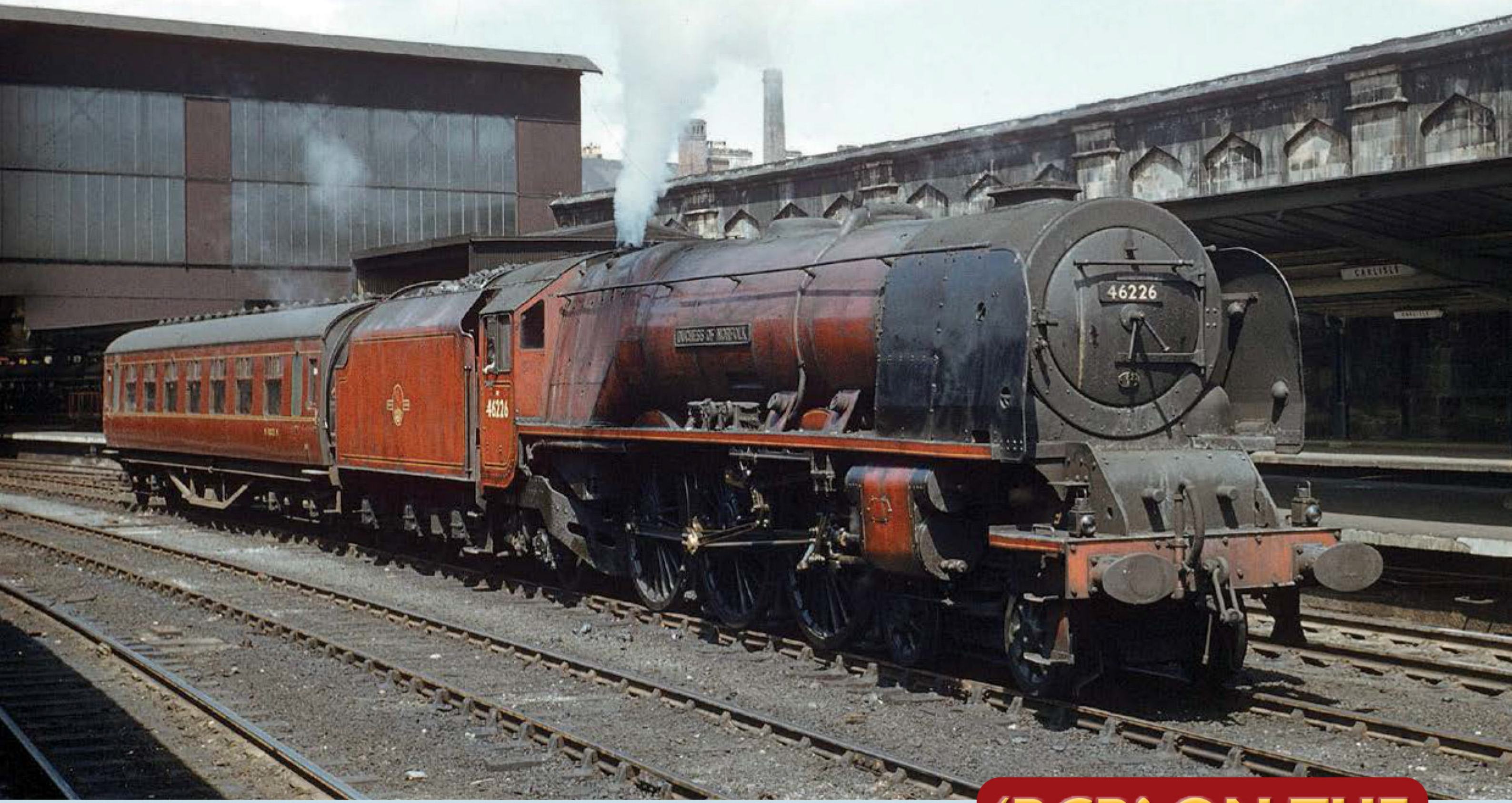
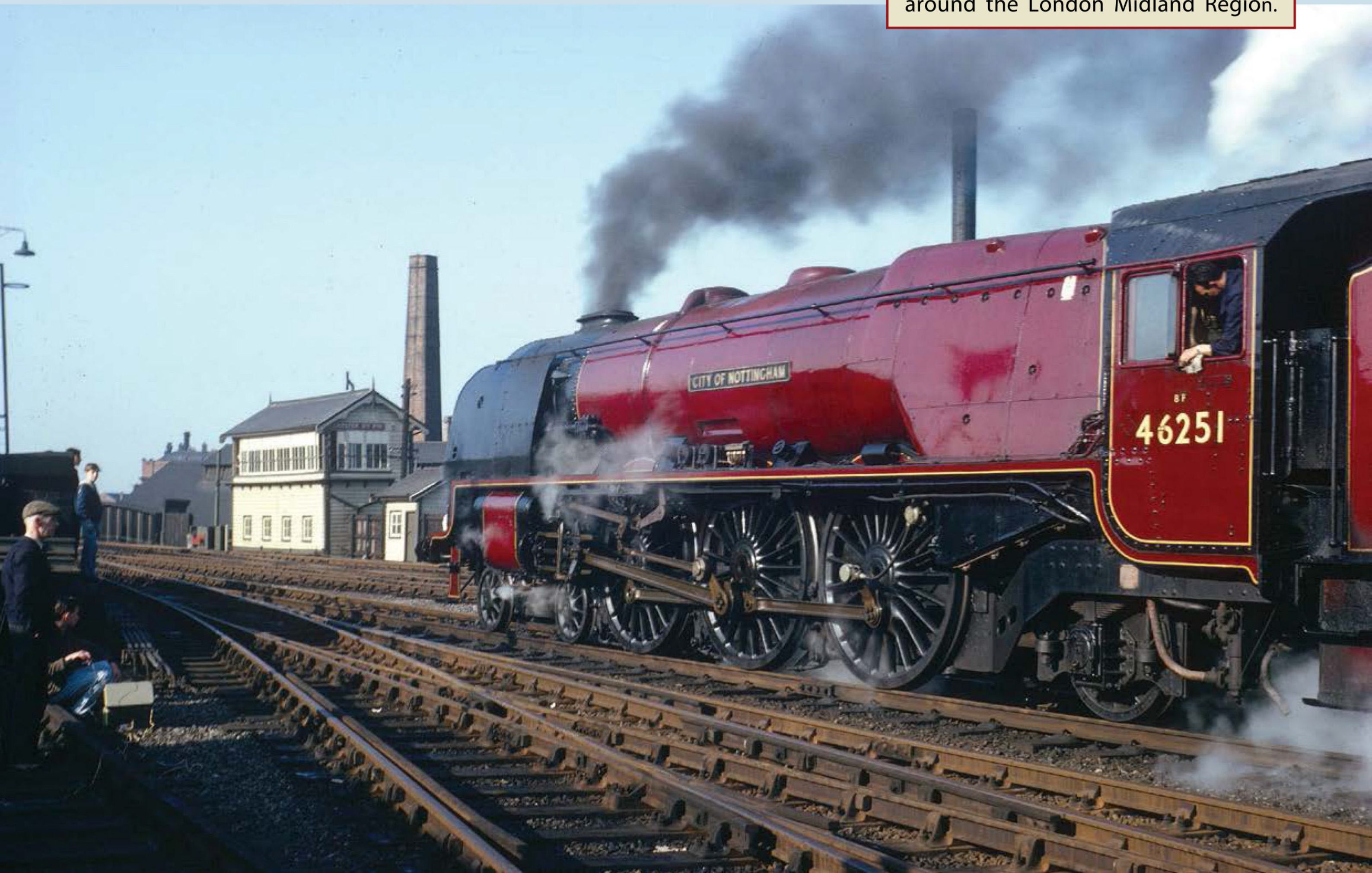


‘RCR’ ON THE MIDLAND

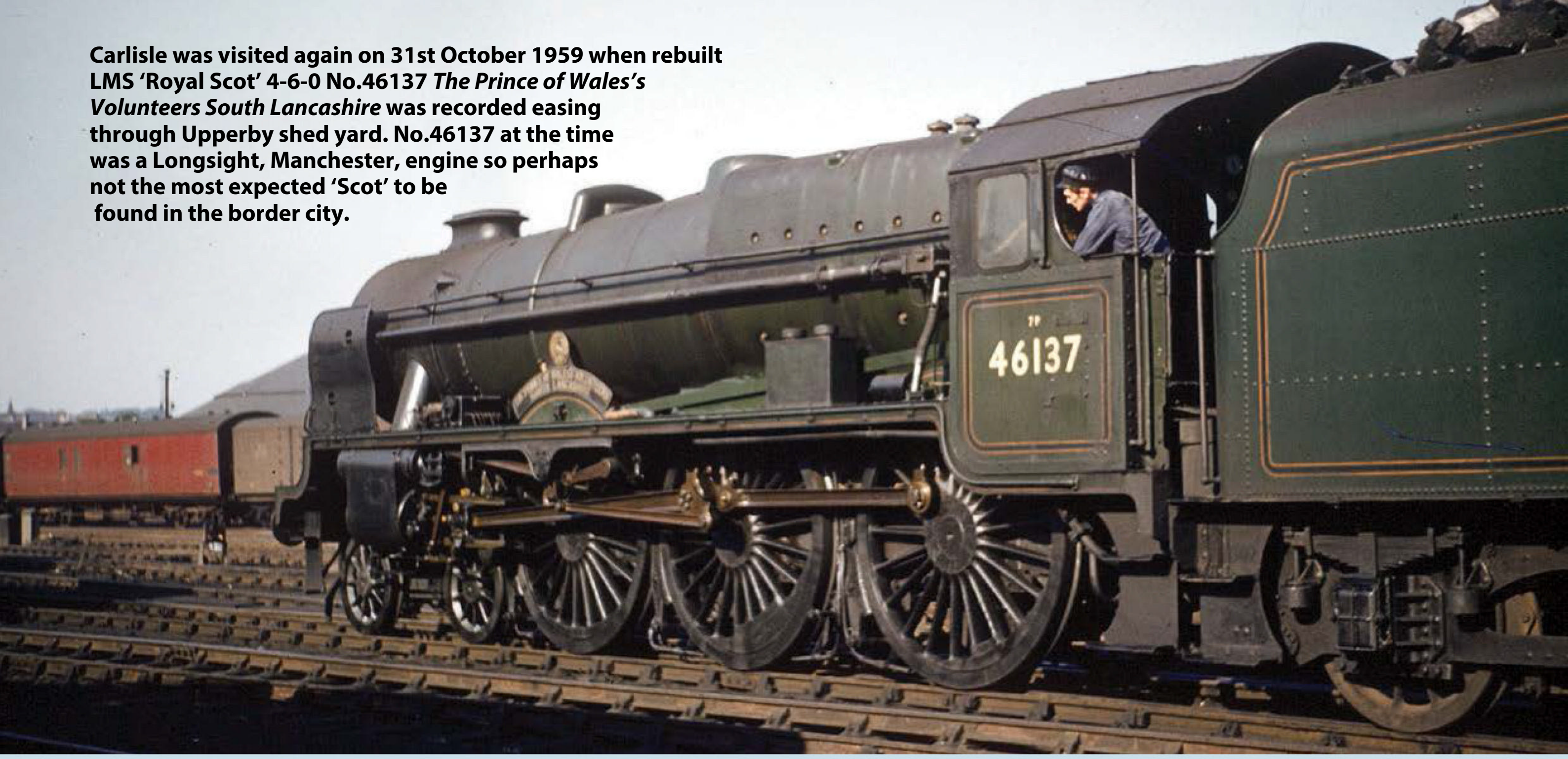
Last year we followed that eminent photographer **DICK RILEY** on his forays away from his most familiar haunts in the south and west to the Eastern Region of British Railways. This time we look at what ‘RCR’ found on his visits further north around the London Midland Region.

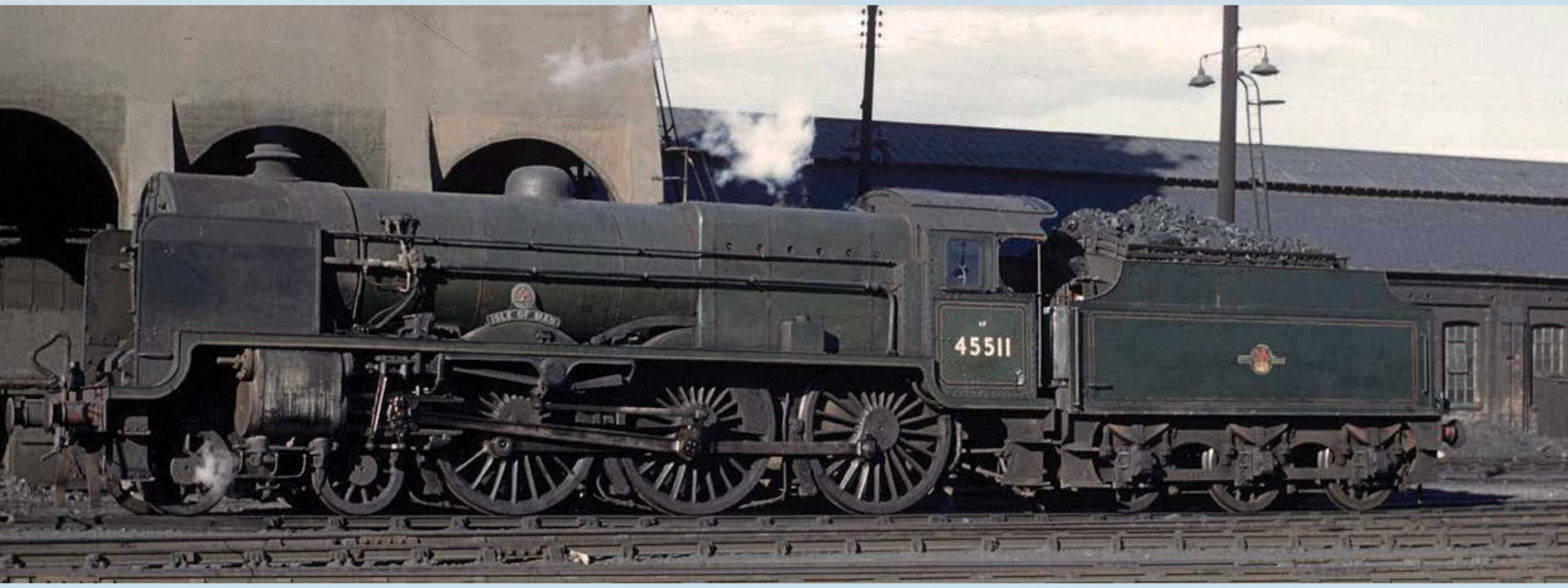
ABOVE: **‘RCR’ ventured north to Carlisle and struck lucky with an LMS ‘Coronation’ 4-6-2 at Citadel station on 27th May 1959. No.46226 *Duchess of Norfolk is* waiting on the middle road to add a coach to an incoming up express which it will take forward to London. No.46226 has the form of red livery introduced late in 1957 with British Railways style lining inset from the edges of the cab and tender, later being repainted the following year in the LMS style (see below) before withdrawal in 1964.**

BELOW: **Another red LMS Pacific was captured on 9th May 1964 when No.46251 *City of Nottingham* was employed on a Railway Correspondence and Travel Society special which it took from Nottingham Victoria to Didcot via the Great Central route and Banbury. It is seen here departing from Leicester Central. No.46251 wears the more approriate LMS lining around the cab and tender edges – and has been turned out splendidly for the occasion.**



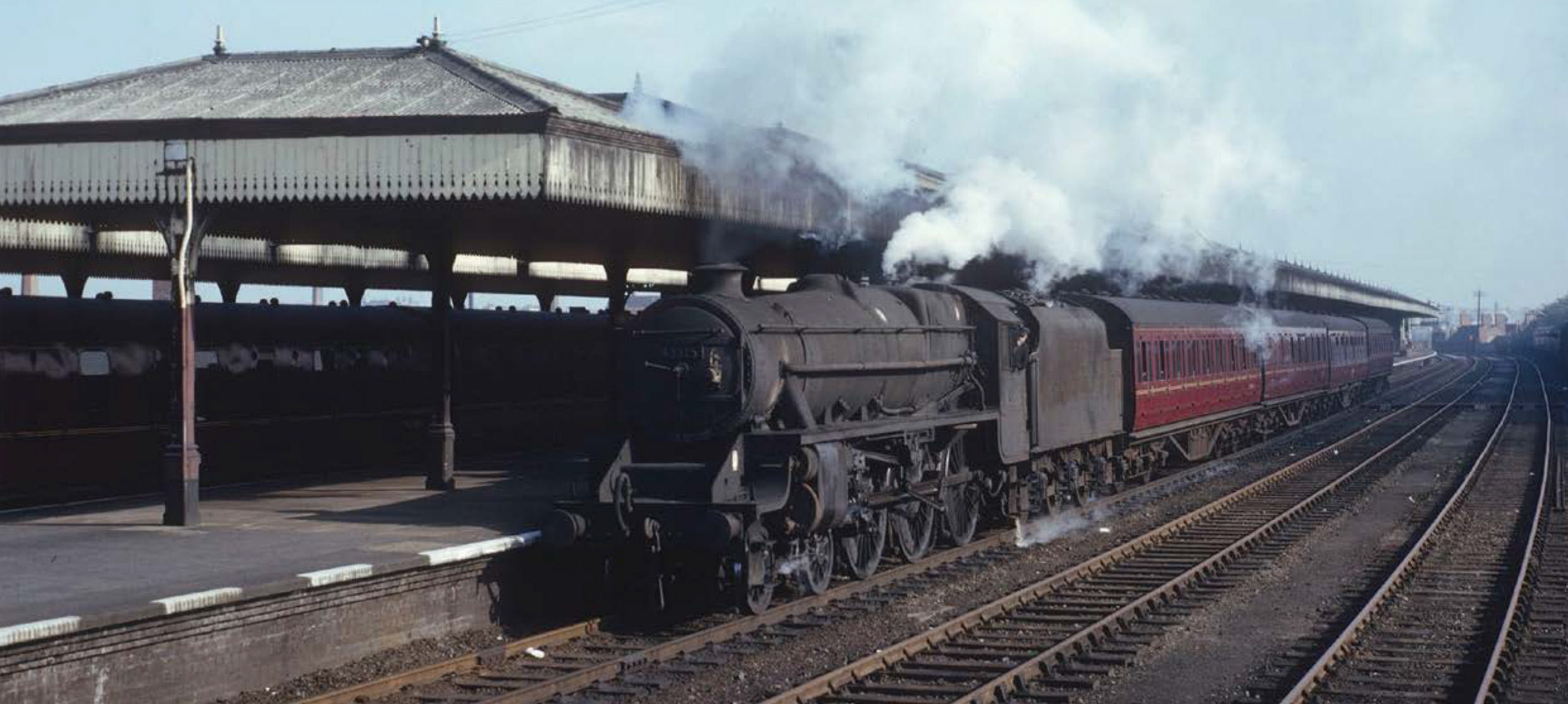
Carlisle was visited again on 31st October 1959 when rebuilt LMS 'Royal Scot' 4-6-0 No.46137 *The Prince of Wales's Volunteers South Lancashire* was recorded easing through Upperby shed yard. No.46137 at the time was a Longsight, Manchester, engine so perhaps not the most expected 'Scot' to be found in the border city.



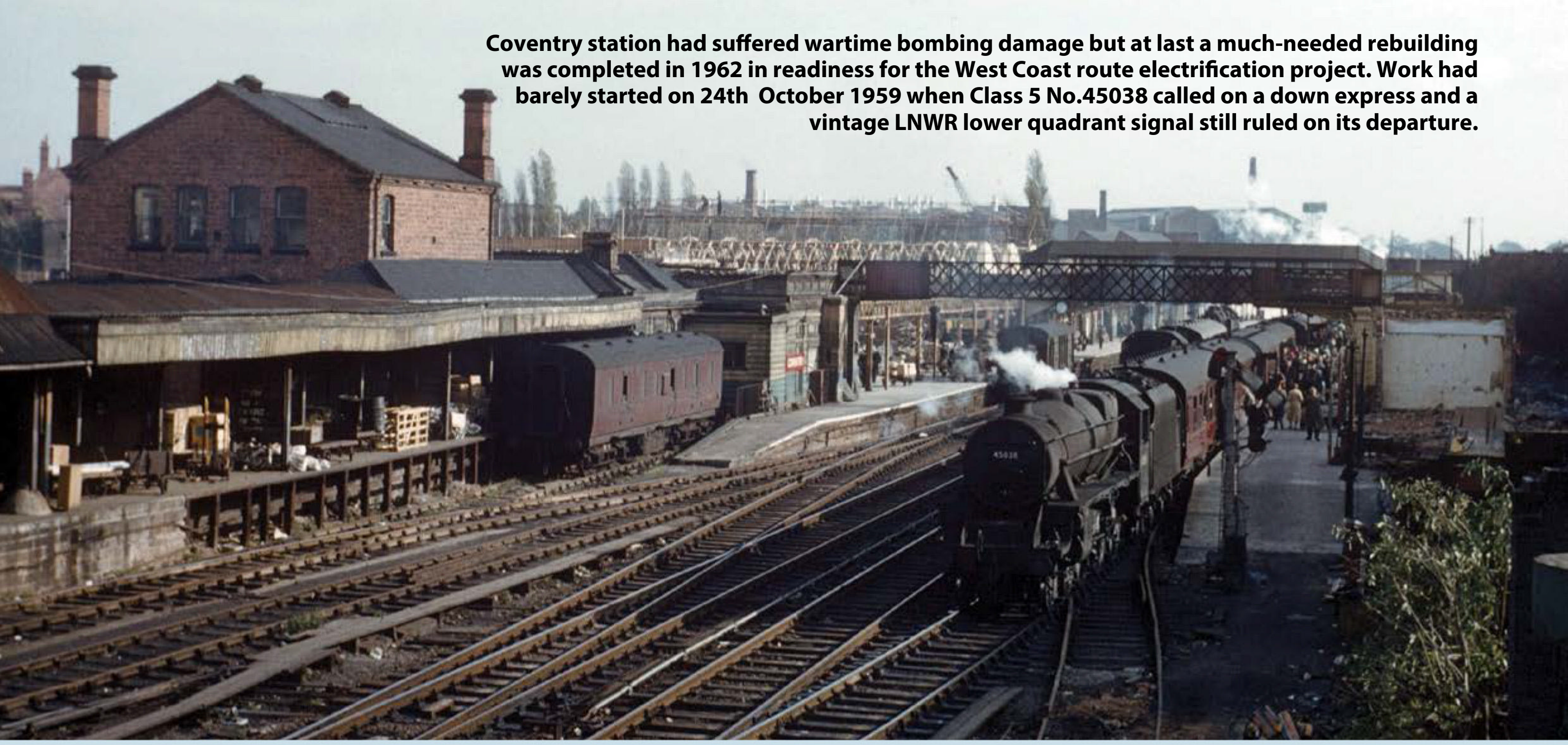


ABOVE: **Original LMS 'Patriot' 4-6-0 No.45511 *Isle of Man* was at home on 29th August 1959, standing in front of Willesden depot's coaling plant having had its tender filled.**

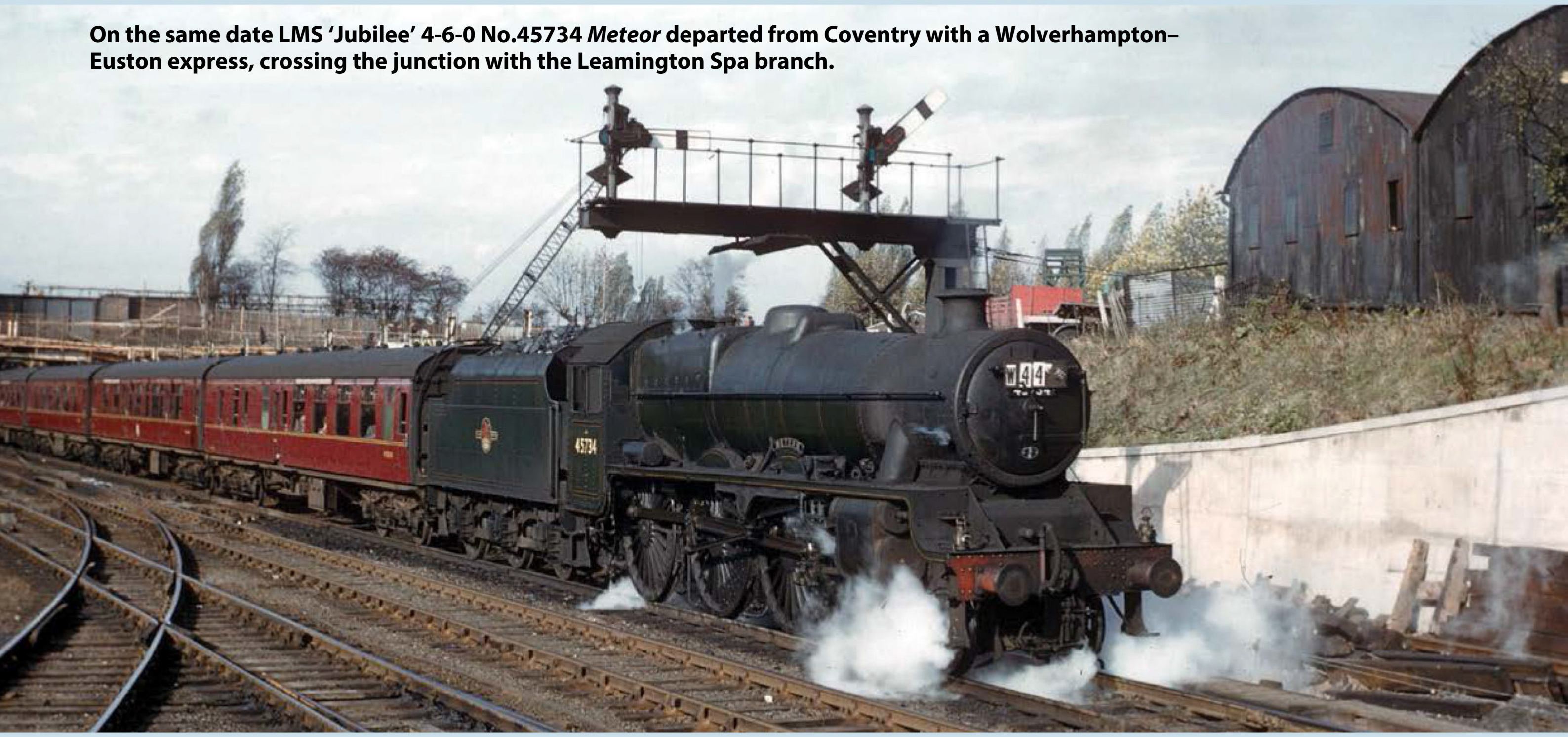
BELOW: **The Great Central line had started nationalised life in the Eastern Region of BR but had generally migrated to the London Midland Region in 1950 and by the 1960s was well into a long run-down. What had once been a main line express route from London Marylebone to Sheffield and Manchester was now mostly reduced to a stopping service between Marylebone and Nottingham – epitomised by LMS Class 5 4-6-0 No.45215 and four coaches at Leicester Central on 9th May 1964.**



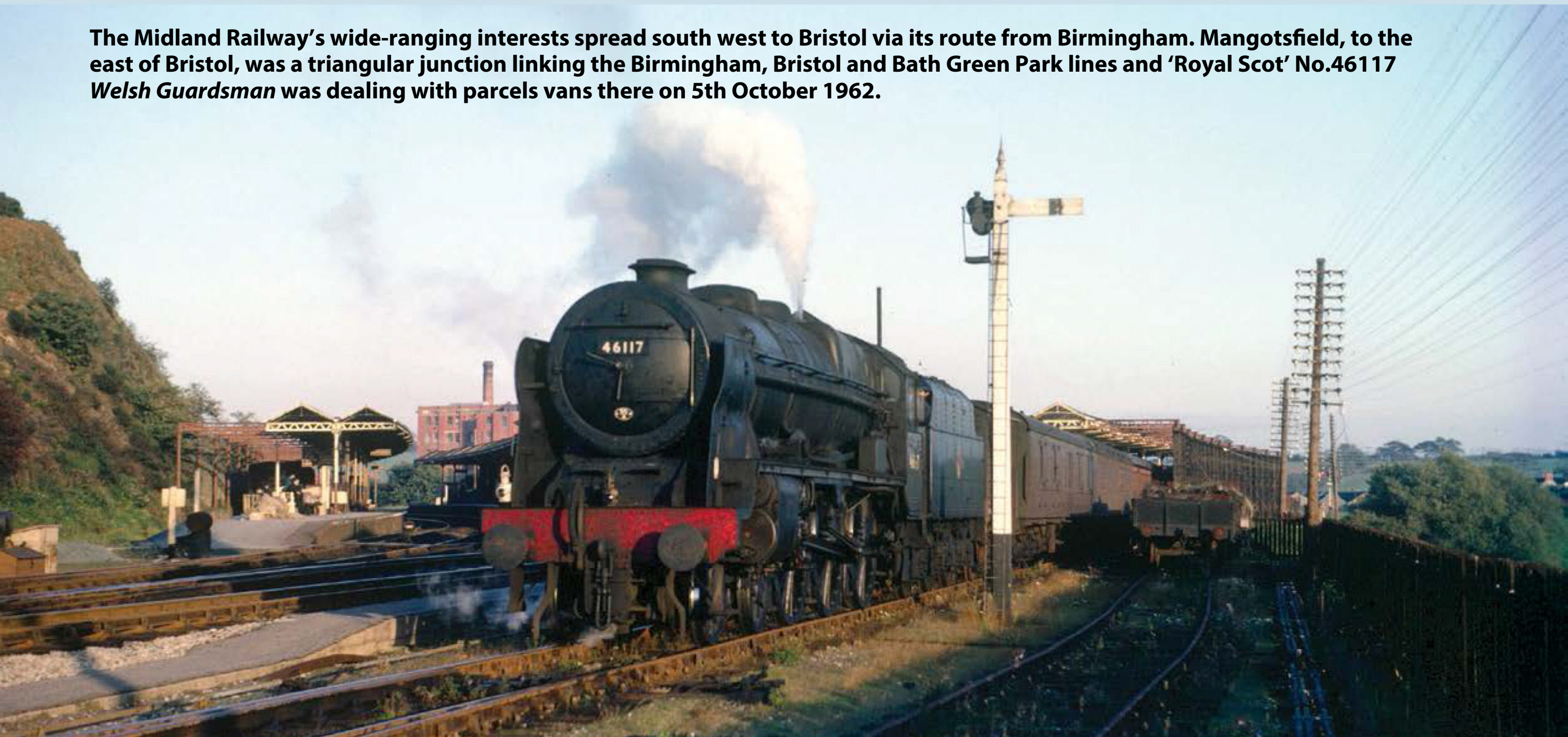
Coventry station had suffered wartime bombing damage but at last a much-needed rebuilding was completed in 1962 in readiness for the West Coast route electrification project. Work had barely started on 24th October 1959 when Class 5 No.45038 called on a down express and a vintage LNWR lower quadrant signal still ruled on its departure.

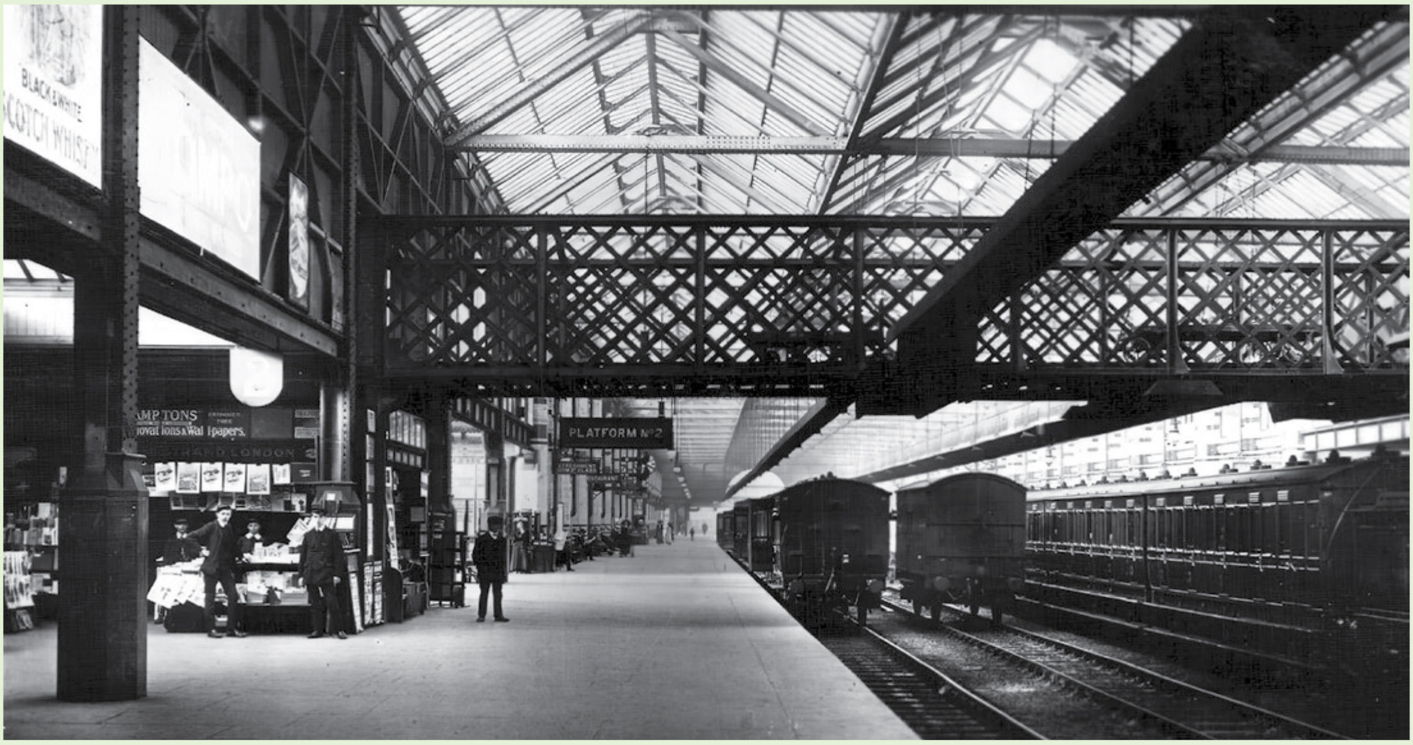


On the same date LMS 'Jubilee' 4-6-0 No.45734 *Meteor* departed from Coventry with a Wolverhampton–Euston express, crossing the junction with the Leamington Spa branch.



The Midland Railway's wide-ranging interests spread south west to Bristol via its route from Birmingham. Mangotsfield, to the east of Bristol, was a triangular junction linking the Birmingham, Bristol and Bath Green Park lines and 'Royal Scot' No.46117 *Welsh Guardsman* was dealing with parcels vans there on 5th October 1962.





The first rebuild of the Leicester Midland station occurred in 1894, completion being achieved in the following year. The architect to the Midland Railway was Charles Trubshaw who designed the new station frontage along London Road and two long and wide island platforms with public and non-public facilities. The accompanying photograph was taken from a position on the down platform (No.2), facing north, between 1890 and 1910. The long length and the generous width of the platforms can be appreciated from this view. A wrought iron lattice footbridge connected the two platforms. Platforms were separated by three roads, the central road dedicated to preparing locomotives for change of motive power, although in this view, a single van seems to be the only occupant of the line. Prominent are the lengthy smoke baffles and the footbridge; there is a fully functioning bookstall. High above these features is the glazed three-bay roof, a portion of which fell in December 1884. (Author's Collection)

WHEN A STATION ROOF COLLAPSES: 1884–1903

BY JEFFREY WELLS

Station roofs were regarded as one of the most important elements in the design of nineteenth century railway stations. In the descriptions of stations, reference is usually made to the style of the roof, the supporting intricate ironwork, the glazing techniques and means of ventilation. Both engineering and artistry were applauded by railway observers, their admiring eyes drawn up to the roof. Take, for example, the description of Manchester Victoria station by the *Manchester Courier* on the opening day, 1st January 1844:

“The station itself is about 800 feet in length, the whole being covered by a light cast-iron roof, divided into three compartments, and supported by three rows of cast-iron pillars, (27 in each row), and by a stone wall on the farther side. The centre compartment of the roof is 59 feet 6 inches in width; the one on the north side of the station, 28 feet; the one on the south, 26 feet 3 inches. One half of the compartment projects over the arrival platform, so as to afford shelter from the rain.”

This is a description of a no-nonsense station roof: there are no references to decorative or ornamental features, unlike the glowing tributes to architects and engineers who were responsible for other city stations, and who left their signature styles to posterity. W. H. Barlow's original single-span roof at St.. Pancras station (1868) is an engineering and artistic achievement.

Partial roof collapses were taken seriously by railway officials and the Railway Inspectorate of the Board of Trade, especially when ironwork, bricks, masonry, and shards of glass rained down on the unfortunate public standing immediately below. However, this is rarely found in the litany of accidents at stations, unlike derailments, overshot buffers, fatalities to passengers (who were forced to cross the lines due to lack of footbridge or subway) and fatal accidents to station staff such as porters, guards, drivers, firemen and others. In the author's possession are many books: not one addresses the subject of roof falls at stations.

The purpose of this article is to redress the apparent neglect of the subject of station roof falls. Reference is made to contemporary press reports, which are repeated fully or in part, depending on their length and relevance. The selected reports fall between 1880 and 1903, damage by Great War enemy activities excluded.

Leicester Midland station: 5th December 1884

We begin this survey of station roof collapse by reference to an incident at Leicester Midland station in December 1884. The *Leicester Chronicle,* 6th December, informed its readers of the fall:

“Early on Friday morning accident, fortunately unattended with any serious consequences, happened at the Midland Station at Leicester. About six o'clock, a portion of the glass roofing fell in with a loud crash. The fallen portion consisted of three bays spanning the permanent way in front of the booking office, and they appear to have given way through decay. The fallen debris covering the metals was soon cleared away, and no delay to traffic resulted. The mishap fortunately occurred at a quiet hour, when there was no traffic; otherwise the consequences might have been very serious. A similar mishap occurred to the old roof of the station some years ago, when one of the bays was demolished by a strong gale of wind. The remaining portion of the roof has been inspected by the officials from Derby, and is reported safe.”.

Leicester Midland station opened its doors to the public on 5th May 1840. It was constructed and operated by the Midland Counties Railway Company. It was this early station which had felt the destructive gale force winds ‘some years ago’. The newspaper report alluded to the rotten nature of the timbers holding the glazed portion of the roof in place. The neglect of station premises by railway companies was often cited as the reason why incidents such as this occurred. Not until Board of Trade condemnation of neglect shamed the company into remedial action were improvements made.

Huddersfield station: 10th August 1885

Huddersfield station opened on 3rd August 1847; it was a joint venture undertaken between the Huddersfield & Manchester Railway and

Canal Company and the Manchester & Leeds Railway. The former became a constituent of the London & North Western Railway (LNWR) on 9th July 1847, whilst the latter changed its name to the Lancashire & Yorkshire Railway (LYR) on the same date.

During an episode of station redevelopment and improvement, the *Huddersfield Chronicle,* 15th August 1885, reported a disastrous roof fall, which claimed four lives. In addition to demolishing the old LNWR and LYR goods stations, there were also plans "to erect new platforms and have lines of rails, so that in future, instead of working all the traffic from one long platform, three will be used".

In place of the old roof, a new roof was proposed, both higher and wider, the first span of which measured 77ft 6in. The old roof at the LNWR end of the station was removed and the debris produced had been almost cleared away. Work in connection with the new roof had been in progress during the early months of 1885. In order to make the work easier, a sturdy mobile crane ran along rails laid on the station platform.

"In this way", commented the *Chronicle,* "the iron girder roof had been fixed for a distance of from 30 to 40 yards, lamps of new and improved pattern had been hung, and to all appearance great alterations, which had been talked of were about to become realities."

It may be of interest to detail the various contractors involved in the work at Huddersfield. General building: Messrs. Radcliffe & Sons of Huddersfield, who sublet the ironwork to Mr. Butler of Stanningley Iron Works, near Leeds, and the joinery work to Messrs. Christie of Huddersfield.

Great local interest was taken in the station's renewal and crowds of people watched the proceedings from a variety of viewing places. On Monday 10th August "The men had started working at their usual time, and joiners were engaged about their woodwork, presumably fixing it in order that the glass might afterwards be placed upon it. At exactly 10.39 the new roof fell, bringing down with it six joiners, three other men being caught in the falling ironwork, with the result that two were killed and seven injured. The crash is said to have been terrific, and within a very few minutes the platform was filled with an excited crowd…"

News of the fall quickly spread through the town. Relatives and friends, whose menfolk worked at the station, were especially anxious. They had good reason to be. "The fall of such a mass at a much-frequented place like the railway station was almost sure to be accompanied by loss of life and injuries to survivors."

However, the number of fatalities and injuries was low. This was thought to be due to the absence of trains waiting at platforms immediately underneath the stricken roof. Had the fall occurred a few minutes before 10.39, the 10.35am train for Brighouse, Halifax and Bradford, with two coaches for Blackpool, would have been trapped in the fallen debris.

"Mr. Radcliffe [the contractor] was in this train, which cleared the span by about two minutes. It is thought, however, that the crash must have been heard by the occupants of the train, as when it passed Hillhouse [a district of Huddersfield, less than a mile from the town centre] both the driver and stoker were looking back."

An inquest followed in the weeks after the fall. The coroner's report is worth repeating as it gives an insight into the cause of the roof collapse.The jurors found that the four workmen were killed through the falling of the roof at Huddersfield Station, on 10th August, during the course of its erection. In the opinion of the jurors, "the roof was not sufficiently stayed or braced, considering the rapidity with which the progress of the ironwork advanced, and also that there was not sufficient general supervision on the part of the company in the erection of the columns, and in detecting the deficient quality of the columns. The jurors were also of the opinion that the structure generally was not strong enough for a roof of such magnitude."

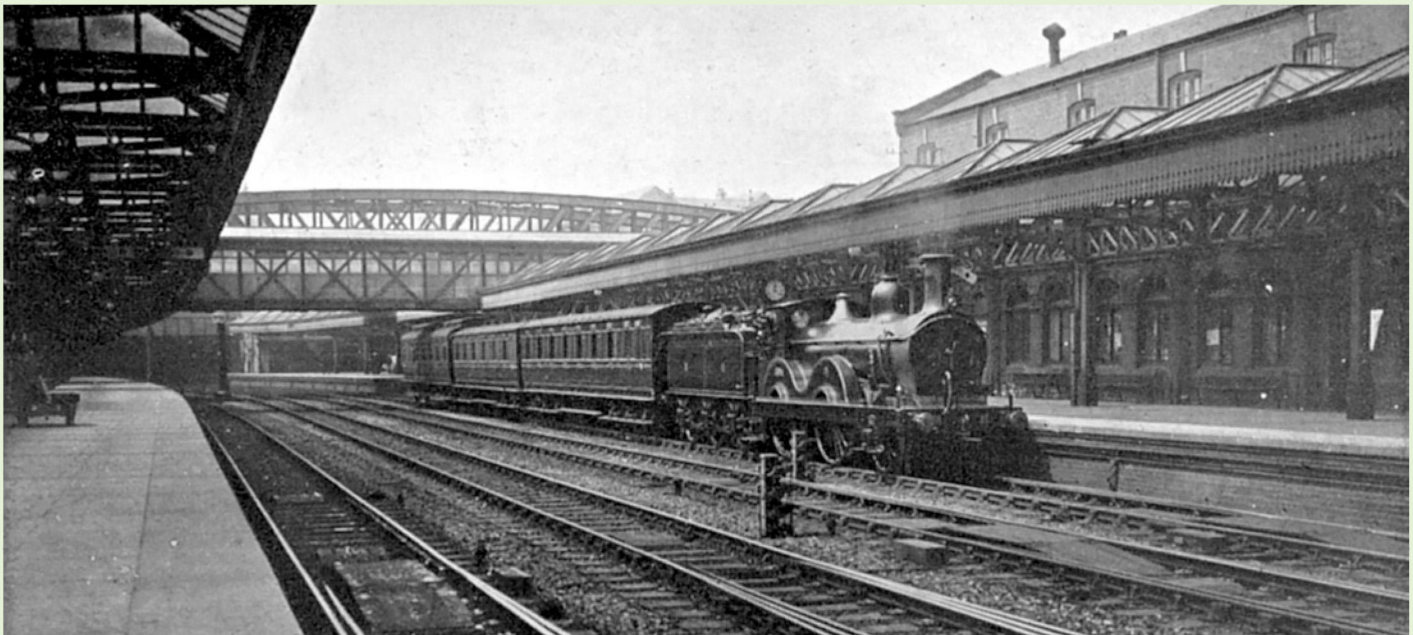
Nottingham station: 24th August 1896

"An accident of an extraordinary and alarming character occurred in Nottingham on Tuesday [25th], a considerable portion of the Midland Railway Station collapsing without the slightest warning."

This is the first line of a news report in the *Derby Mercury,* 25th August. At the time of the roof collapse the station was quiet, all the heavy traffic having departed, although some reports stated that the platforms were thronged with people. The cause of the accident was attributed to the slow movement of engine No.1529*, the tender of which jumped a set of points as it made its way to couple up to a rake of empty fish vans. The tender made contact with an iron roof column, dislodging the base and causing a section of the roof to fall. A portion of the roof, measuring 60ft long by 80ft wide, fell with a thunderous crash. (*No.1529 was a 2-4-0 engine, designed by S. W. Johnson, and was one of 30 of the '1400' Class. It was built by Neilson of Glasgow .and continued in service until 1949.)

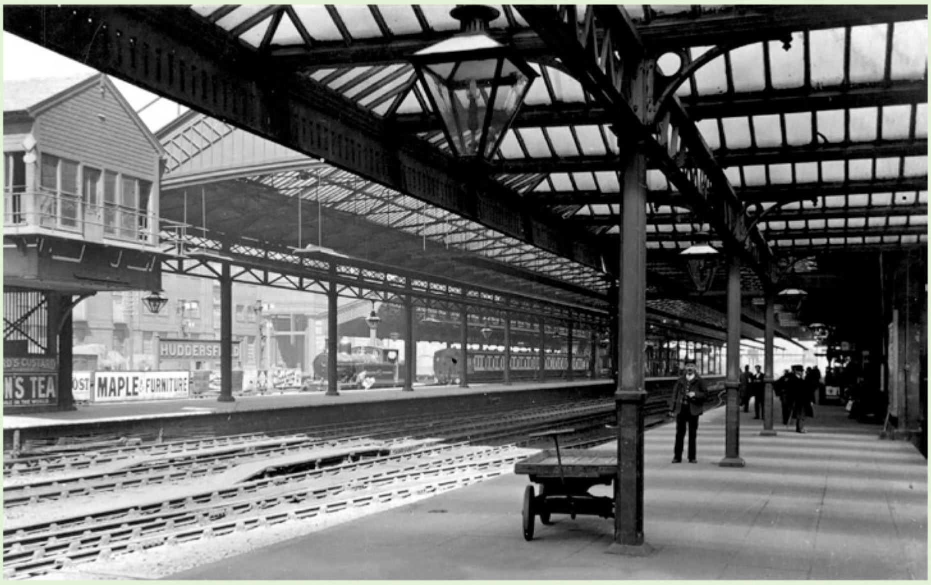
Consternation prevailed, inside and outside the station. Many of the lights were extinguished; owing to the suddenness of the accident, the mass of debris and the cloud of dust, it took a long time to ascertain exactly what had happened. When the dust had settled, it was discovered that the collapse was a serious one.

"At the east, or London end of the station, ten yards above the footbridge, the roof had fallen bodily. Standing adjacent to No.1 platform was an empty passenger train, and two of the coaches in the rear prevented the iron and woodwork from reaching the platform…" On the other side, however, "the supports and iron framework had been torn from the wall, and had dropped directly on to the platform, bringing with them a large amount of masonry. The whole of the lines between the two principal platforms were completely blocked, and some idea of the force of the fall may be gathered from the fact that some of the girders coming in contact with the front of one of the fish vans had lifted one of the hind wheels a foot or two off the rail, and in that position it remained until the wreckage had been removed". Messrs. W. H. Smith & Sons' bookstall had just been closed when a fall of brickwork severely damaged it. To clear the debris, over a hundred men were on



Nottingham's first station was opened by the Midland Counties Railway in 1839. As a terminal station, it had become inadequate by the late 1840s, whereupon a new station, designed by local architect J. E. Hall, opened in 1848. In 1896 a large area of the glazed roof fell on to the platform and tracks. It was not until 1904 that a new station replaced the 1848 structure. Once again, the station design came from local architect, A. E. Lambert. The illustration shows Lambert's station, which opened on the 16th January 1896. The locomotive is one of Johnson's 2-4-0 '1400' Class. (John Alsop Collection) the spot in a short time, work continuing after dark by the aid of Wells’s lights.

Further details were added to the earlier report, indicating “that the part of the roof which fell as a result of the collision with one of the uprights, was 91ft wide, and the mass of debris which fell was a tremendous weight, and completely blocked the line between the two principal platforms. It is a matter of surprise that the casualties were not more numerous or more serious”.



A lull in traffic had visited Huddersfield station on this day, between 1900 and 1904, when the photographer set up his tripod on the up main line platform and captured this scene for posterity. Busy in the background is an LYR radial tank engine, which has either disengaged from a short local train, or is about to connect to it. In 1881 the LNWR decided to extend Huddersfield station by the addition of a second island platform and to make general improvements by providing a subway and erecting a large roof to cover the old and new platforms. In August 1885, during construction work, a portion of the glazed roof collapsed, killing four workmen. (John Alsop Collection)

Crewe station: 7th August 1902

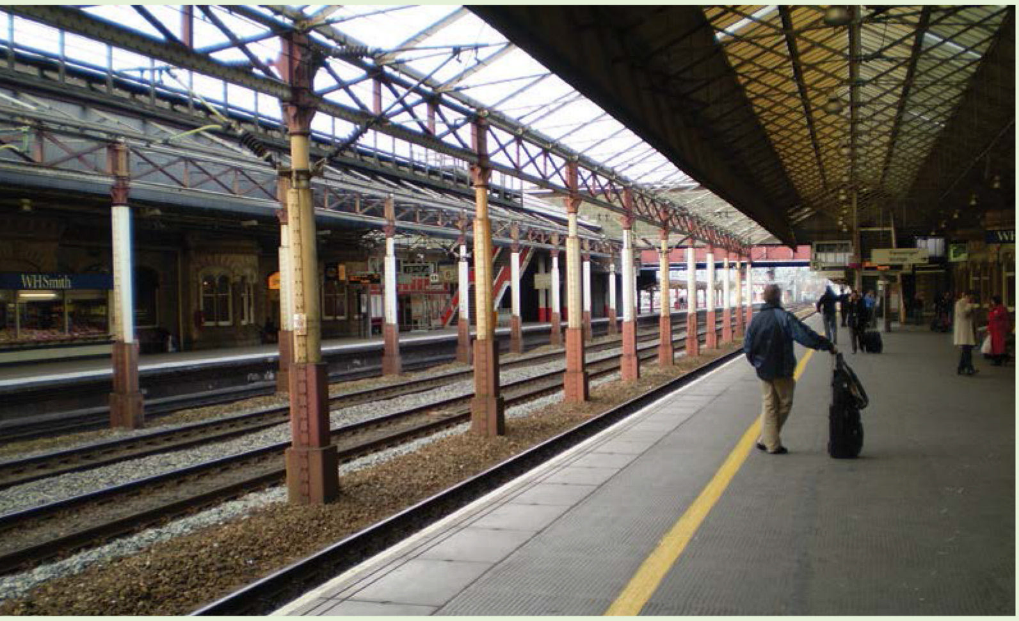
Considerable alarm was expressed by the public at Crewe station on 7th August 1902, when a portion of the roof collapsed. In the words of the *Crewe Chronicle,* 9th August, “It appears that the 9.50 local train to Manchester was leaving the station from the main platform, and was crossing what is known as the ‘north scissors crossings’, when two empty carriages, which were being shunted in the same direction, struck the Manchester train obliquely, derailing several coaches, and doing much destruction.”

Both the local train and the shunted carriages were travelling at a fair rate of speed, resulting in two of the rear carriages of the local train being “thrown with great violence against a huge pillar, which supported a portion of the roof”. The impact caused the roof to collapse; about 50 to 60 yards of roofing was displaced. “This fell with terrible force on to the coaches, the ironwork of the roofing completely smashing the tops of the carriages, while the sides were smashed matchwood.”

The damage inflicted on rolling stock and surrounding infrastructure was described in detail by an eager reporter at the scene: “One heavy iron girder penetrated the centre of one of the coaches at the top, and went right through the floor on to the ballast underneath, whilst another long strip of ironwork went clean through the carriage window and embedded itself in the cushions of one of the seats. The whole sets of metals under the north scissors signal box and the railway bridge was covered with wreckage, and trains could neither come in nor go out that way. The north end of the platform was covered with broken glass, in some places several inches high, whilst splintered wood, principally from the smashed carriages, was strewn about in all directions.”

The collision of carriages and the fall of part of the roof created a loud report. Railway officials were quickly at the scene and made an assessment of the accident. Though alarmed and shocked, the passengers were uninjured and able to resume their journey to Manchester. Breakdown gangs were soon at work clearing the debris, but little impression was made at first owing to the large amount of broken glass. The affected line was not cleared until the following day.

This is a modern view of the up main Platform 5 at Crewe station. It serves to illustrate the indifferent attitude adopted by the LNWR towards the Board of Trade Railway Inspectorate. Lt.-Col. von Donop’s recommendation that cast iron pillars should not be positioned close to running lines seems to have fallen on deaf ears. (Arwel Parry)



On 3rd October 1903, Lieutenant-Colonel von Donop’s Board of Trade report on the roof collapse was paraphrased by a newspaper:

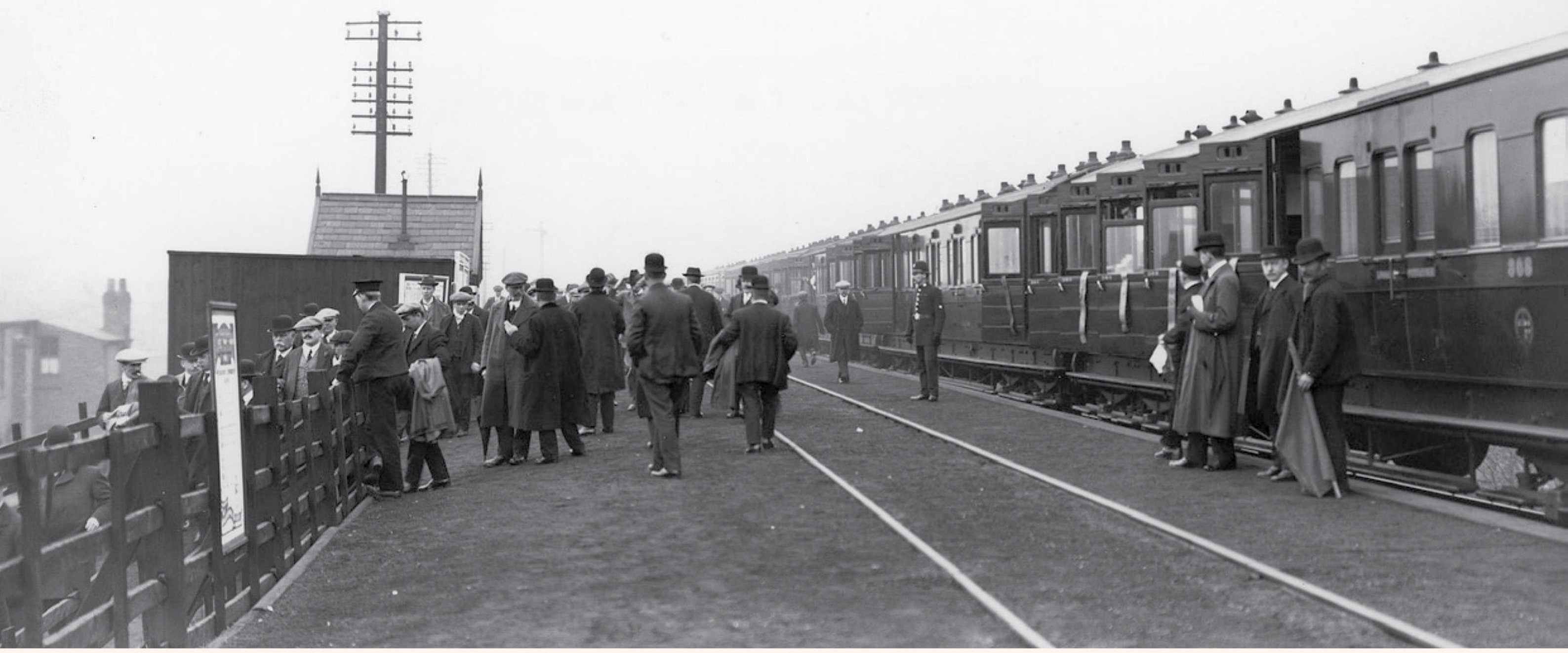
“In this case, as the down 9.50 am passenger train from Crewe to Manchester was crossing at the north end of Crewe station from the down main line, its rear vehicles were run into by two empty coaches which had been propelled along the down main line foul of the crossing. One of the carriages in its derailment struck against two cast-iron columns supporting the station roof, and these two columns breaking a portion of the roof about twenty-five yards in length, fell down on to the permanent-way and the rear portion of the train. One of the girders in its fall, crashed through the roof of one of the saloons, but fortunately, both the saloons were empty, and no personal injuries were sustained by either passengers or railway officials. The inspector says it is probable that the immediate cause of the accident was the fact that the driver moved without instructions. He adds that *the erection of cast-iron pillars on the permanent-way between the lines of rails was a very undesirable arrangement, which was never used at the present day*.” [My italics]

Epilogue

Between 1910 and 1930 the incidence of roof falls at stations declines noticeably. However, one notable roof fall occurred at Charing Cross Station, London. Under the title ‘The Saga of Charing Cross Station Roof’, the story of the station’s roof is given extensive coverage. [See *Backtrack,* Vol.30 No.11, November 2016].

Acknowledgements

Thanks are due to Eddie Johnson for his valued contribution to this article and to John Stevenson, Leicester Railway Society, for his help with Leicester Midland Station.



An LYR 'Highflyer' has just arrived at Racecourse (late Cinder Lane) station, showing the arrangement by which one track was raised higher than the other to form a platform of sorts. The station buildings were very basic. The great majority of passengers, as of racegoers generally, was male at this time. (Pendragon Collection)

THE LIVERPOOL SPRING MEETING

JOHN C. HUGHES takes stock of how the railway companies dealt with race traffic to the Grand National at Aintree.

The Grand National was a national event from its earliest days and doubtless a cause of some of the earliest special race trains. It formed the highlight of the Liverpool Spring Meeting at Aintree, held on Thursday, Friday and Saturday, the big race being run on the Friday – it moved to the Saturday from 1940. This horse race dates from 1839 and for the first few years everything that could turn a wheel was used to carry people from Liverpool to Aintree by the Preston road in a procession described as "riot and rout". But it really came into its own with the arrival of the railways.

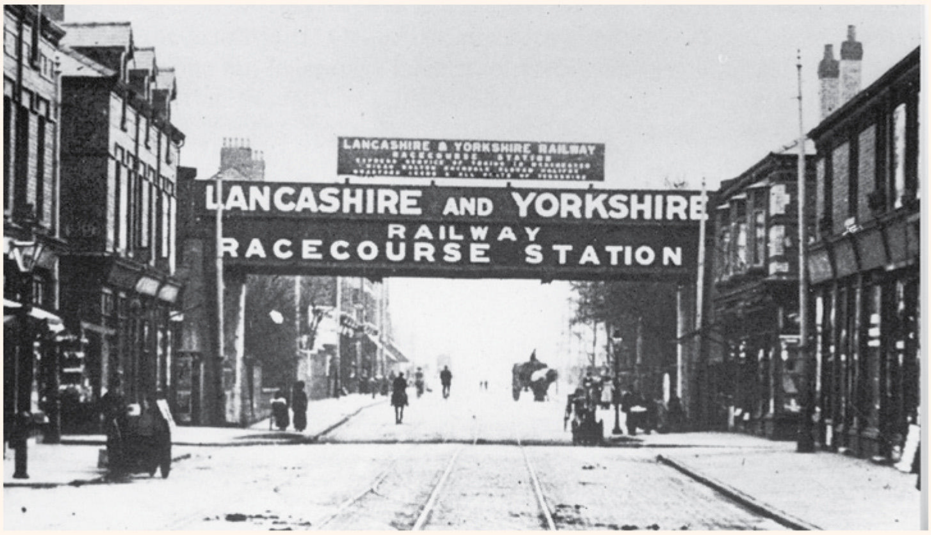
Lancashire & Yorkshire Railway

The 'Railway Mania' produced the Lancashire & Yorkshire Railway, connecting Liverpool with Manchester via Wigan (November 1848) and the East Lancashire – which ran to Blackburn via Preston (April 1849). These companies operated a joint line from the terminus at Great Howard Street to Walton Junction – both then had their own stations at Aintree. For the July meeting in 1849 the two companies advertised a train every ten minutes from the Liverpool terminus to the East Lancashire station, named Sefton Arms for the occasion. This is the first reference to this name, based on a well-known hostelry by the entrance to the racecourse: for many years the name was only used on race days. The LYR's Aintree station was less well placed than the ELR's and I expect the traffic was more than enough for both companies to cope with. A notable feature of this advertisement is that first class trains were run "from near the Goods Warehouse Entrance – the Yard of the Goods Warehouse" at Great Howard Street, while third class passengers were to use the usual passenger entrance. There would also be a separate departure platform for first class when returning from Sefton Arms. This segregation of the classes seems odd now, but with the crowds assembled on these occasions the railways would otherwise have struggled to restrict the first class accommodation to those with the appropriate tickets. One can also imagine that a gentleman with a gold watch and a supply of cash for punting on the horses would prefer not to be caught up in a heaving crowd that certainly contained some skilled pickpockets. Once in a first class compartment, he would still need to steer clear of dodgy card parties.

Things were not managed well at the end of February 1851; perhaps this being the first Grand National handled from the new Tithebarn Street (or Exchange) station was a factor. The special trains were "crowded to excess" – "People who took first-class tickets were compelled to put up with third-rate accommodation, and were crushed almost to suffocation." With doors unlocked, trains were rushed from both sides and hundreds made the return journey on the roofs of the carriages. It was noted in 1875 that the ploy of running all-first class trains accessed from a separate entrance was being used again. The problems of first and third class passengers for other trains being "mixed pell-mell" persisted until 1878, when a new arrangement was tried. Temporary booking offices were provided at the entrance to the station. "Near the platform a barricade formed of old sleepers has been constructed, so as to separate between the first and third class passengers, and across the line a similar obstruction has been raised, which will effectually debar the rougher element from entering the vehicles usually occupied by the elite."

In 1859 the East Lancashire and LYR were combined as the Lancashire & Yorkshire

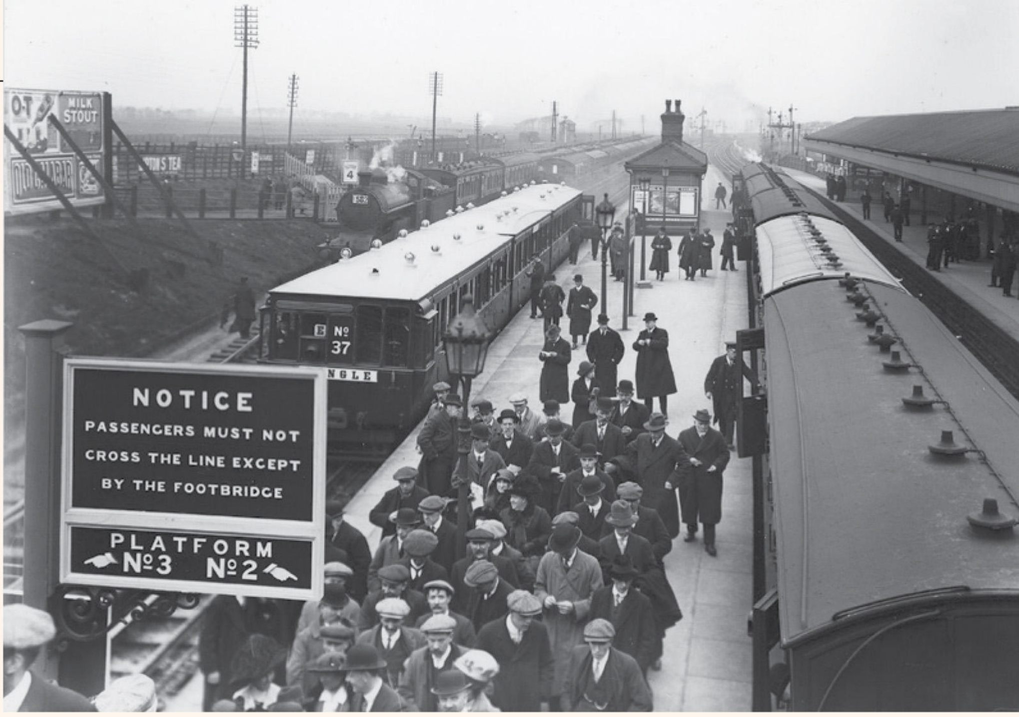
The bridge over Warbreck Moor, seen from the north. The entrance for passengers is just past the shops on the left, with a booking office in a very modest hut, though surely most people came with return tickets. The sign above the bridge lists an impressive number of places in Lancashire and Yorkshire to which passengers could book from here and was presumably taken down and stored somewhere between race meetings. (T. J. Edgington Collection)



Railway: one of the Aintree stations had to go and it was the old LYR one which was renamed Fazakerley.

In the 1860s the LYR's North Mersey branch was built, running from a junction east of Fazakerley station on the line to Wigan and Manchester to a point at the north end of the Liverpool docks. This crossed the Preston line a short way to the south of Sefton Arms station, with a west-north curve connecting the two lines. The new line was intended for goods traffic and there were no plans for a regular passenger service, but the company's engineer was asked in November 1866 to report on how it could be used for race trains. Two years later, Colonel Rich passed the line from Fazakerley to Park Gate Junction and the link from there to Sefton Arms for passenger use and the first specials passed that way in March 1869. Clearly the trains from the Manchester direction had to reverse over the curve to reach Sefton Arms, but that was no more inconvenient than reversing at Walton Junction which they must have done before. Still, it was suggested that race trains might use a sleeper platform on the new line.

In 1878 advertisements for special trains from Manchester and points east promised to deliver the passengers to the "New Temporary Station, Cinder Lane" which was three minutes from the course. This was the long-awaited station on the North Mersey line, of which I have found no description this far back – it was doubtless at least as makeshift as its later manifestation. Three minutes seems to have been a loose approximation for what would be a ten-minute walk for many of us. In 1887 it was being called Aintree (New Racecourse Station), reinforcing the suggestion that it was nearer to the course than the CLC's Aintree station to be noted later.



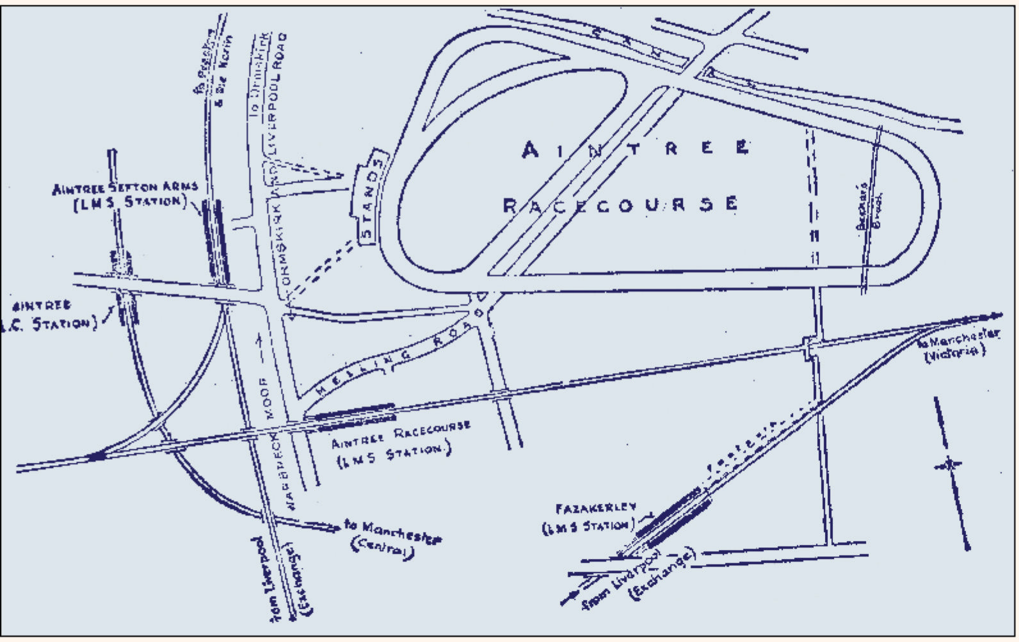
Sefton Arms on 4th April 1913. On the left an LNWR train from the north at the rarely-used Platform 4. Platform 3 has a very smart Overhead special – interesting as being a train with second series motors, which were rarely photographed owing to their early conversion to trailers. Platform 1 on the right was the terminus for the electric 'sandwich trains' from Exchange – the ones whose third and first class passengers had to be strictly segregated. According to Mr. Hall, the generous canopy on this platform "provided cover impartially". Sadly, one can see from this view that the fence dividing the platform appears to come right at the end of the canopy in 1913, though the change in the proportions of third and first over the years may well have given more protection to the humbler passengers later. (Pendragon Collection)

The new Exchange station of 1888 incorporated a pedestrian subway by agreement with the Corporation in place of Prussia Street, closed when the track was lowered. The LYR made this wider to provide a connection between its station platforms with a high railing to separate it from the public subway. This allowed first class passengers to access first class carriages at the outer ends of the three central platforms by way of Platform 2. Third class passengers used the normal access to the other platforms, where they could only board the appropriate class. At the end of the day, the LYR subway could be used to give access to the streets on either side.

The development of the Aintree sorting sidings in the 1880s had the incidental advantage of providing somewhere to put the special trains that were arriving in increasing numbers, while the associated engine shed was also invaluable.

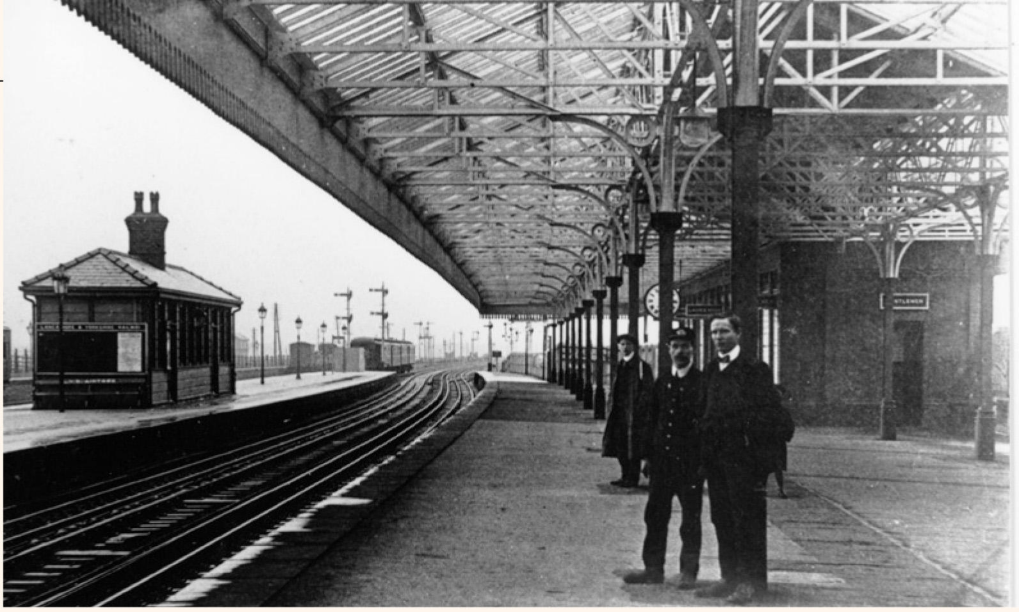
A paragraph in the *Sporting Times,* 7th April 1900, notes that two heavy LYR race trains from York made good time in both directions and thought this an example that the southern companies might ponder – as were the fares. "First-class return York to Aintree 10s. Think of that, those who pay 7s 6d from London to Epsom and 12s 6d from London to Ascot, with no class guaranteed."

An LMS leaflet detailing the additional service of electric trains for the 1931 meeting has this useful plan on the back showing the position of the four local stations in relation to the racecourse – possibly used in connection with main-line specials as well. Through the wonders of creative cartography one is left with the impression that Racecourse station is as conveniently placed as the CLC station, which it certainly was not. You might also be forgiven for thinking that the CLC trains ran only to Manchester. In fact, while the CLC route to Liverpool Central was decidedly roundabout, it was the quickest way home for quite a lot of people living in the western and southern parts of the city. (Author's Collection)



Cheshire Lines Committee

In 1879 the Cheshire Lines Committee's North Liverpool line was opened from Halewood to Walton, continuing to Huskisson goods station in the following year. A branch was thrown off to the north, joining the LYR to the north of Sefton Arms, but it would be some time before any traffic came that way – except that a passenger station was built just to the west of Sefton Arms. As it was only used for race trains at first it made sense to call it Racecourse station. It was a game-changer – potentially. Up to now only the LYR had been able to carry people to Aintree by train. The number of specials from distant parts was increasing, but the other companies serving Merseyside had only been able to bring people to their various termini in the centres of Liverpool and Birkenhead – from where they presumably used the LYR's local trains. Now the Manchester, Sheffield & Lincolnshire Railway, the Midland and perhaps



At Aintree station the photographer pointed his camera northwards towards Ormskirk on a wet day and found shelter under the roof. An important change has taken place at the station: third rail electrification has taken place on the 600V dc system. The *Railway News,* 6th March 1906, stated that the purpose of electrification was to tap the traffic between Marsh Lane and Aintree. "The electrification between the Exchange Terminus and Marsh Lane is already electrified as part of the Liverpool, Waterloo, and Southport system. At Marsh Lane, the line is divided, the section running to the left and crossing the Southport line by a bridge approached by a curved incline. By means of this curved incline and a bridge, the electric system will be extended to Aintree." LYR composite cars were prepared to work on the Liverpool Overhead Railway and the latter company's stock enabled to work over LYR metals as far as Aintree.
(T. J. Edgington Collection)

the Great Northern as well could compete in bringing people to the course – followed by the London & North Western Railway making use of its friendly relations with the LYR. In fact there was no great rush to do this; in 1891, except for one return train from Aintree on the Friday and Saturday nights, the several Midland trains to and from London all used Liverpool Central. Likewise, the LNW London trains were slow to abandon Lime Street. Local trains were run from Liverpool Central – fares the same as on the shorter route from Exchange – and there were also third class trains from the short-lived passenger station at Huskisson, which continued to be used for this purpose after its closure to normal traffic in 1885.

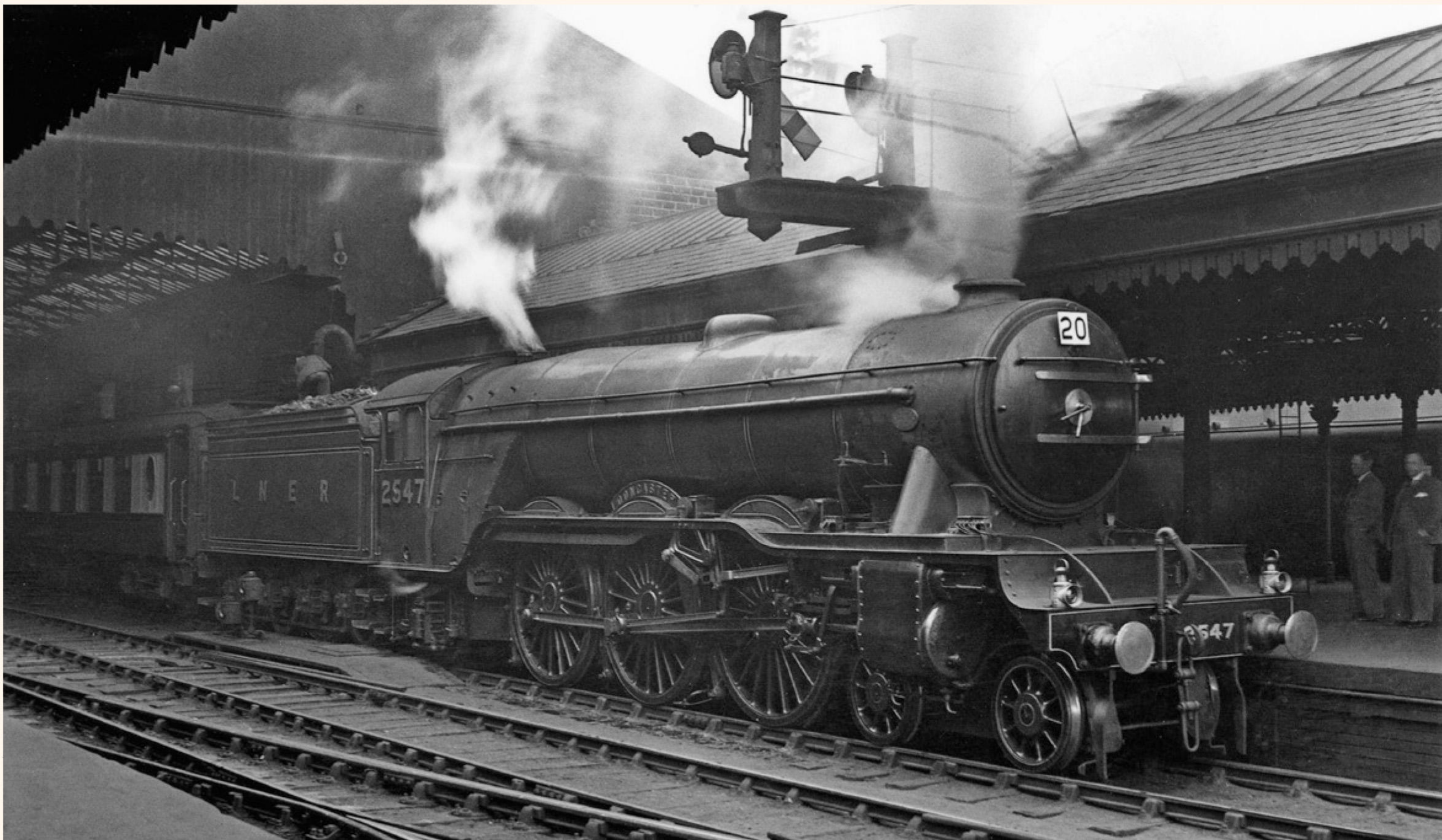
According to the *Sheffield Daily Telegraph* (31st March 1906) it was the Great Central Railway which introduced the idea of tickets with coupons for meals on the train for an all-in price – starting a few years earlier on its specials from London to Doncaster for the St. Leger and now extended to the National. The idea was quickly taken up by the LNWR.

The CLC station was called Aintree New Station 1891-5, before reverting to Racecourse. The fact that for years there were two stations called Aintree Racecourse must surely have caused some confusion.

The Aintree Spring Meeting was the last important meeting of the National Hunt racing season – over jumps. The Lincoln meeting that started the flat-racing season was held immediately before, so that there were a lot of people with a professional interest in racing who wanted to travel direct from Lincoln to Liverpool: owners, trainers, bookies, journalists. In 1878 there were evening MSL trains from Lincoln to Liverpool Central, starting with a royal special for the Prince of Wales, travelling in an ordinary Midland saloon, and then an all first class train. The Midland was soon running its own trains – in 1887 an express with a Pullman dining saloon "by the New Route, via Ilkeston Junction and Ambergate" – conveying passengers only. That last bit is explained by a second train, which travelled a bit slower and accommodated passengers and horses. By 1891 a third Midland train was running along with four MSL. In later years there tended to be one Midland train for passengers that split, with the smaller portion going on to Southport, each part with its own dining car.

So far as the advertisements I have seen go, the Great Northern was content to leave the Lincoln–Liverpool traffic to its CLC partners, only joining in March 1904 – noted as a new departure in the *Sporting Life*. The new trains were an evening dining car express from the Great Northern station at Lincoln to Liverpool city centre where people would be wanting to find their hotels and a return working from Aintree to King's Cross at the end of the Liverpool meeting. The startling thing is that at the western end these trains used LYR stations, not CLC – Liverpool Exchange and Sefton Arms – and this remained the case for several years. I can only connect this with the falling out that occurred between the Great Northern and Great Central companies following the building of the London Extension and the GN's enthusiastic use of the running powers it obtained in

LNER A1 4-6-2 No.2547 *Doncaster* with the Pullman special from King's Cross at Sheffield Victoria on 29th March 1935.
(Rail-Online.co.uk)



On 24th March 1956 B1 4-6-0 No.61080 brings the empty stock for the 5.10pm to Hull from Aintree sidings to Racecourse station. The footpath going under the bridge on the left leads to Aintree shed. (Rail-Online.co.uk)

compensation. I have seen no indication of the routeing of the GN trains – presumably the Great Northern was avoiding the GC's Woodhead line rather than the Cheshire Lines Committee, of which it still owned a third.

London & North Western Railway

'Rooty Tooty' of *The Sporting Times* (3rd April 1909) provides a rare account from the passenger's point of view. He travelled on the LNW special leaving Euston at nine o'clock (all first class). "I had booked two places beforehand, and the seats in the train were numbered and reserved. The numbers were plainly and boldly marked outside each carriage, so all we had to do was to walk leisurely down the platform and drop into the comfortable places prepared for us." An excellent lunch was enjoyed before the train reached Aintree at 1.15, and so to the racing, then back to the same seats for the 4.45 departure and a fresh pot of tea. "At seven o'clock we had a dinner that would have done credit to the Ritz. The saddle of lamb, with new peas and fresh asparagus, brought perfect spring into the cars. And let me tell you that every spring that was under the cars must have been perfect too; for I have never experienced smoother travelling. We were never conscious of our speed; there was no oscillation, no jostling, no spilling of soup, no upsetting of glasses, as we merrily rolled homeward. We reached Euston on the stroke of nine, punctual to the minute." This was the train hauled by *Sir Gilbert Claughton* in 1913 ['Claughton' Class 4-6-0 new from Crewe that year], running non-stop to Wigan before turning off to Racecourse (LY) station. For the few passengers who had not opted for combined rail and meal tickets a brake composite and one first class carriage sufficed. The rest travelled in six twelve-wheeled dining cars and two eight-wheeled, followed by a six-wheeled brake. I am in no doubt that Mr. Tooty's unsolicited testimonial relates to the LNWR's twelve-wheeled stock.

Great Western Railway

Having failed in all its attempts to reach Liverpool, the Great Western Railway had to content itself with running specials to Birkenhead and getting the passengers across to Liverpool by the ferry – no great handicap, perhaps, when other trains from the south also terminated in central Liverpool. I cannot say if any attempt was made to get GW specials to Liverpool over other companies' lines by agreement as was done by, for instance, the North Eastern.

A possible alternative to the ferry was the Mersey Railway, extended from James Street to Central Low Level in time for the 1893 race. Special trains were then run by the Wirral and Mersey Railways in connection with CLC trains to Aintree. The Mersey Railway receivers' minutes for 5th March 1897 note that Dugald Drummond was to be consulted about the possibility of working trains with two of the Mersey's engines coupled. For an explanation of this, I know of no source but some unlikely newspapers. (Thank you, British Newspaper Archive!)

The *Aberdeen Evening Express* of 24th March 1899 describes an interesting scene at Central Low Level between 10.50 and 11.50 that morning when "a number of heavily-laden special trains, each drawn by two locomotives, arrived from Bristol, Worcester, Oxford, Birmingham and Wolverhampton," the passengers going on to Aintree for the Grand National by the CLC or LYR. The trains all included GW dining saloons – it is not clear how many there were as some may have served more than one of the places mentioned. The absence of any from Paddington is noteworthy, though one may have arrived after the time-span named. We also find a GW special from Kidderminster "to LIVERPOOL (James Street and Central Stations)" advertised for the 1897 race. James Street would be the best station for people wanting to proceed by the LYR route. An obvious problem is that passenger trains long enough to need a second engine would be too long for the platform at Low Level. This may have been dealt with by having the trains draw up twice, which was not so unusual. Another is the possible challenge to the Mersey's ventilation, which was stretched at the best of times. This through running ended with electrification of the Mersey Railway in 1903, if not sooner, and the Great Western had to run its trains to Woodside again, the ferry crossing and conveyance by motor vehicle (buses) to the course being covered by the fare in 1929. Not much has been published about specials that did not make it to Aintree, but the *Railway Observer* noted four 'Halls' and four 'Castles' at Woodside for the 1937 race.

The race specials attract notice

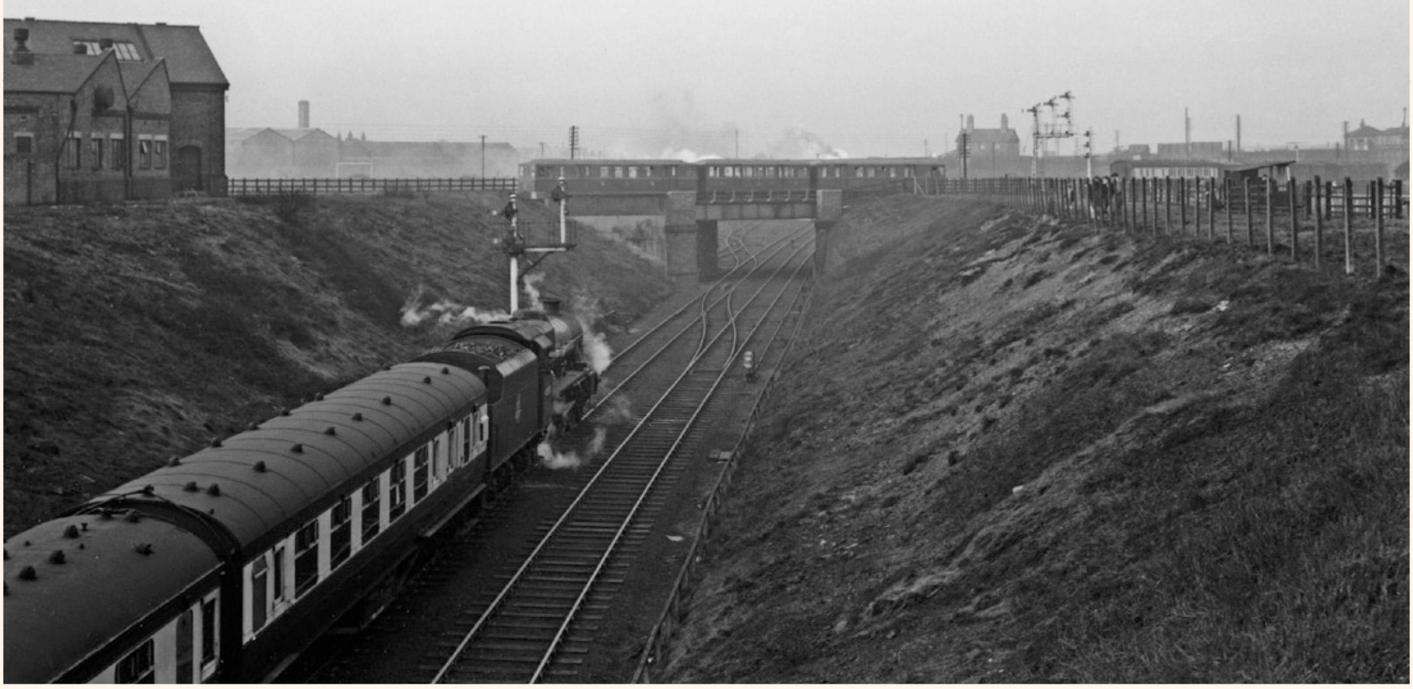
An article entitled 'How the Railways work the "Grand National" Traffic', by George Milne, appeared in the *Railway Magazine* in 1906. The writer thought this was the first such article and seems to have been correct in this assumption. It describes the events of 1905, when there were 200,000 people at Aintree, from the King down.

The three stations were the Cheshire Lines station, with five platforms, Sefton Arms with three, and Racecourse – one platform created by laying gravel to the height of the rails on the north (up) track, which was itself raised about a foot higher than the other line. (The accommodation amounted to a couple of huts.) In addition to the usual services 86 specials were booked: 26 to Racecourse, 31 to Sefton Arms and 29 to the CLC station. 29 of these were the local services from Liverpool. LNWR trains ran to Racecourse from North Wales, Birmingham and London, while trains were sent from Hull by the North Eastern and Hull & Barnsley Railways. Most of the trains at Sefton Arms were locals from Liverpool. LNWR trains from the north also came here: Carlisle, Windermere, Whitehaven. (The LNWR still had a half-dozen long-distance specials to Lime Street.) The GCR sent trains from London, Hull, Sheffield and many more obscure places. MR trains came from Chesterfield, Bedford, Bristol and London.

There is no Great Northern train listed – thought odd at the time, and none yet from Scotland. Formerly, the Great Eastern had run a daily horse-box service from the Newmarket area, but this had now been taken over by the Great Central. (GE 'Claud Hamiltons' and D13s were bringing these trains to Aintree again between the wars.) All the stations were limited in their facilities and no place to be on a cold, wet day in March – though with spare platforms and horse docks at Central and Sefton Arms. Only Central had a platform canopy, and that a short one. (Around 1910-11 the east platform at Sefton Arms was given a generous canopy, quite overshadowing the CLC's feeble effort.) The LYR cleared some of its sidings at Aintree to accommodate the specials during the meeting, the locomotives being handled at Aintree shed. The CLC had Walton shed to hand, but had to store trains as far away as Southport.

The LYR prepared five trains, each of fifteen six-wheelers pulled by an 0-6-0, to run a shuttle service between Exchange and Sefton Arms. These crossed to the down platform to let passengers out through their segregated exits without having to cross the line. Meanwhile, the engine that brought in the last train would come on to the rear to take this one back in a slick operation doubtless honed by long practice.

In 1936 Milne wrote to the *Railway Magazine* to say that he had seen a Furness 4-6-4T and 4-4-0 at Sefton Arms as well as a Hull & Barnsley 4-4-0 at Racecourse,



'Jubilee' 4-6-0 No.45583 *Assam* on the 5.10 return special to Carlisle in 1956, halted by the end of Aintree shed on the way to Aintree Central. This train presumably turned off the main line at Preston and used the link north of Aintree to reach the old Cheshire Lines station. The Aintree curve bridge ahead, with a modernised Overhead train passing over it, has the second span usual on this line – provided in anticipation of the line being quadrupled later, which never happened. (Rail-Online.co.uk)

unfortunately without saying when. Surely the North Staffordshire must have sent a train from Stoke, but that may well have gone to Lime Street.

The LYR's Liverpool electrification reached Sefton Arms in 1906. This allowed the Liverpool Overhead Railway to run Grand National specials from Dingle. In 1907 the LYR introduced its electric sandwich trains for the Liverpool shuttle service. These were formed of four sets of ten six-wheelers with an electric motor car at both ends – connected by cables along the carriage roofs. The official capacity of the steam trains had been 502 seats, the sandwich trains having 512 – though we need not suppose that these limits were strictly adhered to at the busiest times. To start with there were seven first and three third – at the country end. The proportions may have been changed to 6/4 later, but even then the high proportion of first class in the local trains is striking. The motors were all third class, so the one at the first class end had to be relabelled. The platform barriers (a simple fence at Aintree) were still erected to keep the different classes of passenger apart, green and white flags being fixed on the platforms to help drivers to stop their trains in the right place. To ensure a quick turn-round, these trains carried a guard at either end and there were spare drivers at Exchange and Sefton Arms to take over each train as it came in.

In 1912 most long-distance specials were cancelled on account of a coal strike. This was a problem for the people who took a 'Biograph' film of the event and rushed it to London. A Graham-White aeroplane landed at the course to take this out, only to be thwarted by high winds – but a fast motor to Liverpool to catch a regular Midland train ensured that the film could be shown in London that night. (The 'London Film Special' was an institution that lasted a long time – worked by a 2P 4-4-0 in 1929.) *Sir Gilbert Claughton* was too big for the Aintree turntable in 1913 – as was a North Eastern 4-6-0 – and they were coupled together and sent to Burscough Junction where there was a suitable triangle.

The race was run in 1915, with much reduced attendance, and then moved elsewhere until peace was restored as the course was wanted for war service. By 1921 it was getting back to normal.

Between the wars

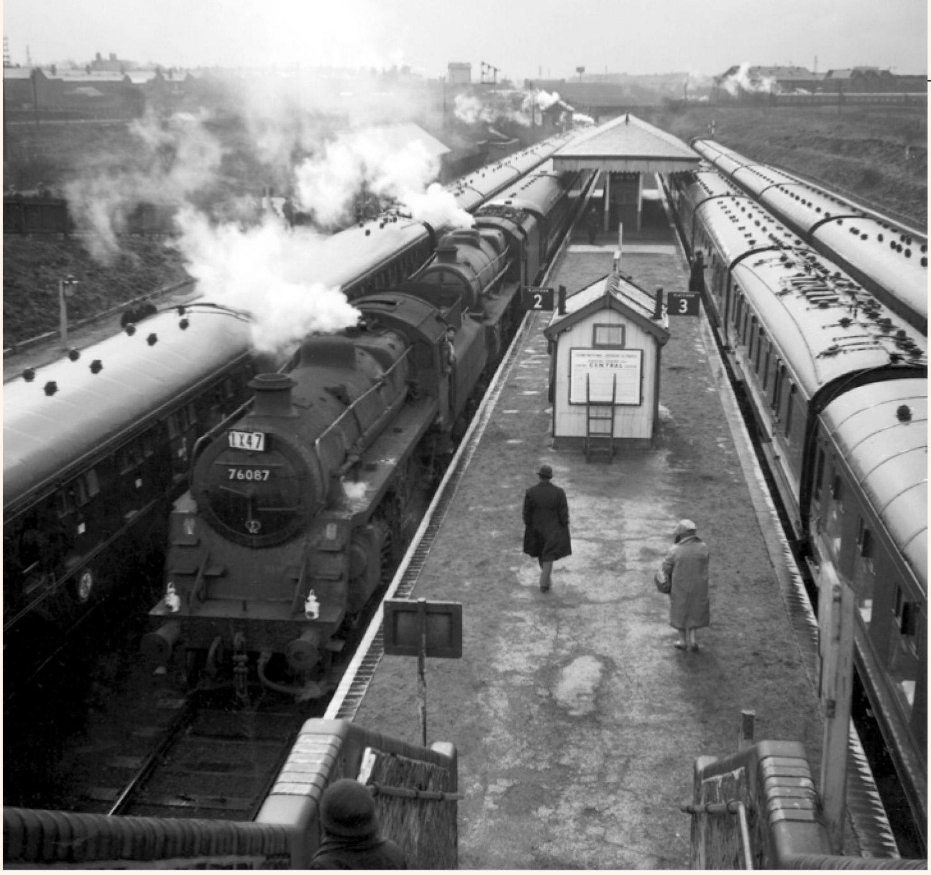
It is fair to say that the railway interest of the National was maintained between the wars. I have not attempted to keep track of the number of specials from year to year as they are quite difficult to count. Looking at the shuttle service between Liverpool Exchange and Sefton Arms (special trains by any reckoning), the race day services from places like Manchester (some of them quite ordinary) and the restaurant car trains from places with no regular service to Liverpool – where do you draw the line between local and long-distance trains? There were also the GWR trains to Birkenhead and others to Lime Street, sometimes just run as extras to the ordinary timetabled services. And then the trains from distant parts, combined along the way and continuing with the same two engines – naturally counted as one train at the Liverpool end. The trains tended to get longer to cater for more people, so that many had to draw up twice at the CLC and Racecourse stations, and the number of engines to be seen at Aintree certainly increased into the 1930s. *The Illustrated Sporting and Dramatic News* of 25th March 1938 contains a nice photograph of an LMS clerk plotting paths for some of the company's "fifty special passenger-trains and twenty horse-trains" – evidently covering the whole three-day meeting. Next to this is another photograph showing the erection of some of the Automobile Association's 400 temporary road signs directing motorists to the course. As early as 1928 Imperial Airways was flying people to Liverpool from Croydon, though it was only later that light aircraft were accommodated inside the course.

The two or three trains that would formerly have been sent by the North Eastern and Hull & Barnsley Railways were naturally diverted to the ex-GC line and the CLC station after grouping. Likewise, the odd train from Gloucester was diverted to Racecourse (LMS), but most of the old Midland specials stuck with the CLC, no doubt because there just wasn't any room for them on the purely LMS lines. An LNER leaflet for a special from Darlington in 1931 (*Backtrack* February 2009) gives the destination as Aintree (C.L.C. Racecourse Station) – it was Aintree (C.L.C. Station) in 1936.

R. W. Hall's article, in the *Railway Observer* 1970-72, gives the fullest account of the empty stock and light engine workings (not to mention horse-box trains), mostly for the period 1919-39. Some trains to Sefton Arms were sent to North Mersey goods yard or Bank Hall where they could be serviced and the kitchen cars topped up with gas. The engines with these generally went to Bank Hall shed – Aintree was for the Racecourse trains. The CLC was not so well-placed: some trains were sent to Southport or to sidings along the way, some were able to use sidings by the CLC station and the King's Cross Pullman, last in and first out, just stayed on the main line till it was time to go. The engines were divided between Southport and Walton sheds – Walton had a convenient triangle for turning the larger engines.

There was still a steam shuttle service between Liverpool Exchange and Fazakerley, catering for people who preferred a vantage point near Becher's Brook or Valentine's – eight trains in 1931. Some of the more unsung locomotives were stationed at strategic points in case of breakdowns, while goods engines were employed as bankers on the hill from Wigan to Upholland.

Sidings were added north of Fazakerley Junction by 1906 and again in 1911 for coal wagons, involving long approach lines at either end and taking the lines conveniently to a point from which favoured people could watch the National. The Southport 'club train' was used as the LYR officers' special from Manchester, to be stationed on the goods loop overlooking the Becher's and Foinavon* fences [*though not officially named as such until 1984]. "An officers' saloon operated a shuttle service for special guests to and from Racecourse station in the nineteen-twenties" – usually with a Beyer Peacock 4-4-0 in charge. A second officers' special from Euston was added by the LMS, with directors' saloon attached. The pile-up that



Aintree Central on 31st March 1962 with BR Class 4 2-6-0 No.76087 and LMS Class 5 No.44868 heading the train from Cleethorpes. The train at Platform 3 has an LMS kitchen car. The bridge beyond the platform shelter carries the ex-LYR Aintree curve from Sefton Arms station on the left to the North Mersey line, passing Aintree shed on the right. The big notice on the platform hut provides information about return specials. (Rail-Online.co.uk)

led to *Foinavon's* unexpected victory in 1967 can still be viewed online with the BR officers' special in the background.

The *Daily Mail* Special, carrying photographs and reports of the race to Manchester, was noted in the *Meccano Magazine* for May 1929. The year before it consisted of two coaches behind a D6 on the CLC line. Another contribution made by the railways was that the Midland's Adelphi Hotel in Liverpool hosted the official Grand National banquet, during which the winning horse was led up the steps to the front entrance and taken round the dining room.

By 1934 the six-wheelers for the electric sandwich trains had been replaced by bogie stock in three sets, still old-fashioned but noted as being "in excellent condition". Mr. Hall says there were now two third and three first.

One train from Macclesfield in 1934 ran to Edge Hill and then over the LNWR's Bootle branch, turning on to the LY's Southport and North Mersey lines and then taking the old curve to Sefton Arms. It was only in December 1936 that Major Wilson passed the east-north curve from Olive Mount to Edge Lane Junction for passenger working. This became the preferred route for LNW-line trains from the south, but it is not clear what the train in 1934 did – it may just have reversed on to the Bootle branch over the west-north curve.

In the years following the grouping there can be no question that the engines produced by the LNER were more interesting, even though most of them remained pre-grouping GC types right through to 1939. A1 Pacifics appeared on the King's Cross Pullman special from its introduction in 1928. The best engines the LMS had were already an everyday sight in Liverpool, but in the late 1920s nearly all the main LMS specials arrived at Aintree behind a 'Prince of Wales' and when these were replaced it was mostly by 'Black 5s' and Midland-type 4-4-0s. Until quite late in the thirties, the best engines the LMS had were conspicuous by their absence from Aintree. The small turntables available were certainly a factor – the provision of new 70ft turntables at Bank Hall (1934) and Aintree (1936) opened the way to larger engines and the modern coaling plant installed around this time was also welcome, but the change was not dramatic. Incidentally, the Gresley Pacifics were barred from the CLC – but they came anyway.

The race was run in 1940 and then closed down for the duration. The course was used for housing British Army units, French sailors, assorted deportees and finally the American Army.

The decline

With the coming of peace the race was restored, although it was soon apparent that decline had set in for the railway contribution. Six trains were seen on the Cheshire Lines in 1950, down from seventeen in 1939 and only three of them off the former LNER – a fall possibly exaggerated by some specials from the North East reverting to their shorter pre-grouping routes. A count in 1958 came to 23 long-distance specials. Racecourse station was used as late as 1961. The CLC station was named Aintree Central from July 1950, closed to regular passenger services in November 1960, and handled its last race trains in 1963. What made the National an occasion still worth the attention of a railway enthusiast into the early 1960s was the marked improvement in the class of engines used. Rebuilt 'Scots' became common, followed by 'Britannias' – most of them running to Sefton Arms over the LNWR's Bootle branch. The more exotic visitors tended to be things like the blue 'Midland Pullman' or the 'Devon Belle' observation car. The sandwich trains did not survive the war as ordinary electric sets now sufficed, but the Overhead Railway kept sending up to nine vintage trains to Sefton Arms until 1956. So far as concerns the trains that actually made it to Aintree, it can now be seen that the great days were from about 1900 to 1939.

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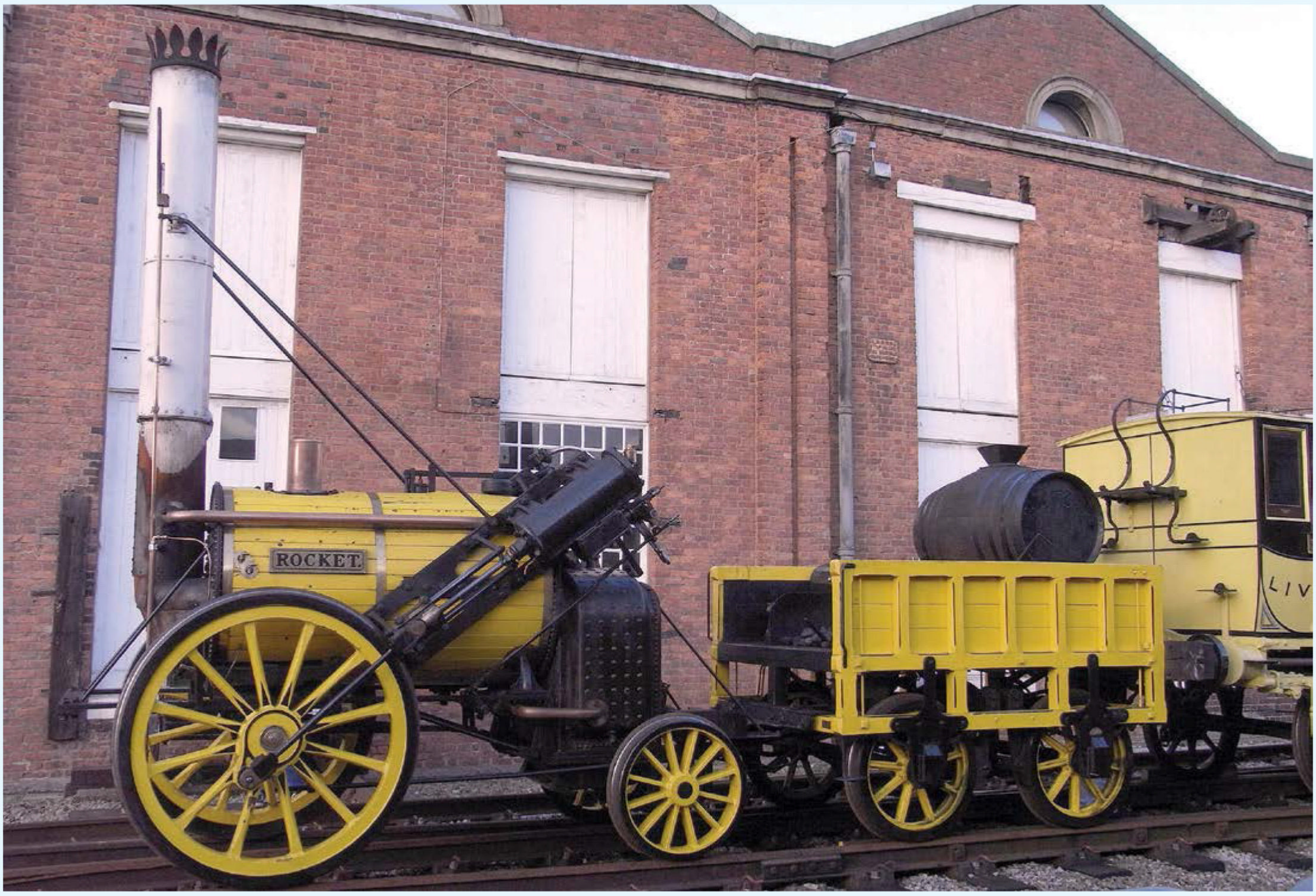
The 'South Wales Pullman' near Rainhill, en route from Swansea to Sefton Arms on 21st March 1964. (Rail-Online.co.uk)



The 2009-built replica of *Rocket* looking 'at home' in front of the 1830-built warehouse at Liverpool Road station, Manchester (now part of the Science & Industry Museum) during 2010 to mark the 175th anniversary of the Liverpool & Manchester Railway.
(Lauren Jaye Gradwell)

'ROCKET' AND ITS KIN

PART ONE

'ROCKET' AND RAINHILL

BY ANTHONY DAWSON

Rocket is one of the most famous and recognisable railway locomotives; its victory at Rainhill in October 1829 is seemingly well-known, so too its part in mortally injuring William Huskisson MP on the opening day of the Liverpool & Manchester Railway. Its history outside these two epoch-making events is, however, less well known. This article will explore something of its design and history; Part Two will discuss its sisters.

'Rocket' men

The design of *Rocket* is popularly ascribed to George Stephenson alone, but the idea to build an entry for the Rainhill Trials of October 1829 came not from George or Robert Stephenson but rather from Henry Booth, the Secretary, Treasurer and later General Manager of the Liverpool & Manchester Railway. Having made the suggestion to George, Stephenson senior "took a day or two to look in to the merits of the plan I proposed and then told me it would do, and join me in the venture".[1]

Booth (1789-1869) was the scion of a wealthy and influential family of Liverpool Corn Merchants. The Booths, like many of the 'great and good' of Liverpool in the late eighteenth and early nineteenth century, was a Unitarian and it was for Renshaw Street Unitarian Chapel that Booth's first essay in boiler design appeared, for the chapel's central heating system. Of an inventive turn of mind, he had taken out his first patent in 1819 for a steamboat with a form of hydraulic transmission.[2]

Booth was a member of the circle of radicals which grew around William Roscoe, the Abolitionist Unitarian who would be Member of Parliament for Liverpool in 1806. Booth, like Roscoe, was an Abolitionist which must have put him somewhat at odds with the slave-owning Chairman and Deputy Chairman of the Liverpool & Manchester Railway. He had been a member of the Liverpool Jacobin Club and had been opposed to war with Republican France. Later a member of the Liverpool Concentric Society, he was a supporter of free trade, the abolition of the Corn Laws and religious emancipation: Unitarianism had been illegal in England until 1813. Booth was active in local and regional politics, championing the Reformed Parliament of 1832 and movements for liberty as far afield as France, Spain and South America.[3] Always technical-minded, Booth would take a hand in designing the coke-burning boilers for *Lancashire Witch* (1828), the first locomotive designed to burn coke, the vertical boiler *Twin Sisters* (1829) and famously *Rocket*.

Booth's boilers

The boiler of *Lancashire Witch* was a form of double-return flue, a type of boiler used by Trevithick on his London Steam Carriage and for his pioneering locomotive at Penydarren.[4] This was a central main flue running through the boiler barrel, which in returning bifurcated into two smaller diameter flues which both terminated in their own chimneys. Within the main flue were two water tubes to further increase the heating surface. This boiler design may not have been successful as it was modified with twin parallel boiler flues each with its own firebox, the first tentative step toward the multi-tubular boiler. By using coke to prevent smoke, Booth and the Stephensons had mitigated one 'nuisance' of the steam locomotive. The second nuisance was that of noise. Thus, in order to keep noise to a minimum, instead of using a strong blast characteristic in the chimney, a pair of bellows, driven by eccentrics under the tender, was used. They provided a continuous stream of air via a nozzle or tuyère under the fire. George remarked in a letter to Timothy Hackworth that the bellows worked perfectly and "there was *not the least noise* [author's emphasis]' about *Lancashire Witch* in operation, justifying the decision to use bellows to mitigate the noise problem. Furthermore, the use of bellows on a coke fire was application of existing technology – that of the smithing hearth – in order to get a coke fire to burn as hot as possible so as to prevent smoke.[5] The *London Courier* reported:

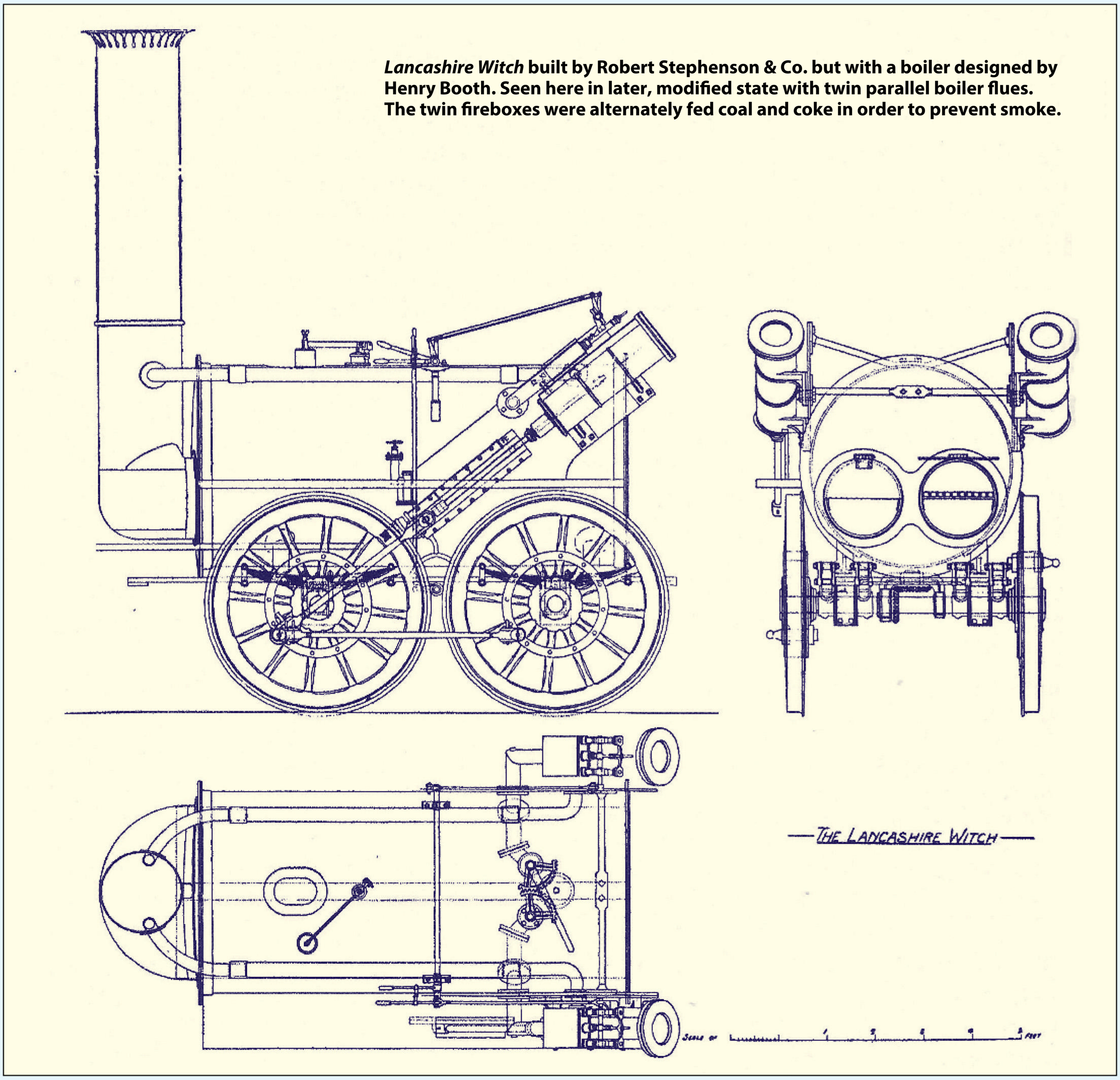
"In this engine the smoke is also partially destroyed, by means of a blast of atmospheric air, which by assisting combustion of the fuel, so not only increases the intensity of the heat, but allows less to pass off in the shape of smoke."[6]

Similar technology was used by Braithwaite & Ericsson on *Novelty*, by Bury and Kennedy on *Liverpool* and by Marc Séguin in France. All of them were endeavouring to get a high through-put of air in order to encourage complete combustion of the coke fuel to both prevent smoke and provide the maximum amount of heat – and, to some degree, reduce noise, too, from the use of a sharp blast characteristic. In the case of Séguin, however, he was forced to adopt the expedient of rotary fans due to the presence of numerous tunnels on the Chemin de Fer St. Étienne which precluded the use of a long chimney in the Stephenson manner. Indeed, if Booth's multi-tubular boiler design for *Rocket* had not been a mechanical success – and considerable difficult was found in keeping the tubes water-tight and preventing the tube plates from bulging – it is possible that it would have been fitted with a return-flue boiler, just as its namesake *Rocket* for the Stockton & Darlington (delivered just before Rainhill) had been.[7]

Booth had been "in almost daily communication with Mr. Stephenson" mulling over ideas for a new boiler: "The plan of boiler comprised the introduction of numerous small tubes, two or three inches in diameter, and less than an eighth of an inch thick, through which to carry the fire, instead of a single tube or flue 18 inches in diameter; by which plan we not only obtain a very much larger heating surface, but the heating surface is very much more effective, as this intervenes between the fire and water only a thin sheet of copper or brass, one-eighth of an inch thick, instead of a plate of iron of four times that substance."[8]

Thus it was Booth and George who entered what would become *Rocket i*n the Rainhill Trials for the not insubstantial premium of £500, or about £34,000 in today's money. Robert Stephenson, who was responsible for the design and construction of the locomotive, however, felt that his role warranted participation in the partnership as well. Booth wrote he had "no desire to dilute my interest in this little speculation" but as "father and son seemed bent on it" it was eventually decided that each would take an equal share – one third – in the "profit or loss in the speculation".[9]

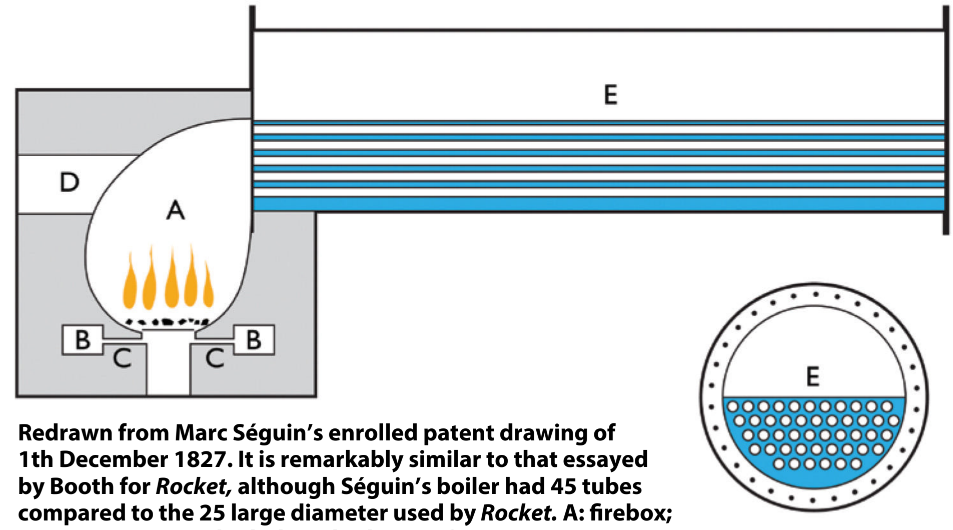
A multi-tubular fire-tube boiler was not new, of course, the first practical application being made by the Marquis Jouffroy d'Abbans (1751-1832) for his steamboat in 1784, whilst French chemist and inventor Philippe Gengembre had patented a multi-tubular boiler in 1821. James Neville had patented his multi-tubular boiler in 1826 and Marc Séguin (1786-1875) of Lyons enrolled a patent for a multi-tubular boiler in December 1827. Neville's boiler, intended for a steam carriage, was vertical, whilst that of Séguin *et al* were horizontal. Séguin had come to the same conclusion as Booth in Britain, albeit at least twelve months earlier, concerning the



***Lancashire Witch* built by Robert Stephenson & Co. but with a boiler designed by Henry Booth. Seen here in later, modified state with twin parallel boiler flues. The twin fireboxes were alternately fed coal and coke in order to prevent smoke.**

inefficiency of a straight-flue boiler. He wrote:

"The insufficient speed of these [locomotive] engines… made me recognise the necessity of increasing the means of steam production: thus since the year 1827, I commenced to put into execution the plan that I had been maturing for a long time by multiplying the heating surfaces by causing the hot air resulting from combustion to pass through a series of tubes immersed in the water of the boiler."[10]



Redrawn from Marc Séguin's enrolled patent drawing of 1th December 1827. It is remarkably similar to that essayed by Booth for *Rocket,* although Séguin's boiler had 45 tubes compared to the 25 large diameter used by *Rocket*. A: firebox; B,C: tuyères; D: stoke-hole; E: boiler. (Andrew S. Mason)

For both Séguin in France and Booth and Stephenson in Britain the biggest problem would be getting the tubes water-tight under pressure. Seguin's boiler steamed before that of Booth with Séguin taking out a series of detailed experimental steamings during the winter of 1827 and spring of 1828, during which copious notes were taken. Although Séguin's boiler is typically described in Britain as being for a 'stationary engine', it is clear from Séguin's own writing that he "had no practical interest'"in a stationary boiler and was intending his designs for a railway locomotive. Indeed, as engineer of the Chemin de Fer de St. Etienne à Lyon he never intended the line to be worked by stationary engines. Thus, as Archard and Séguin concluded in 1926: "the merit of having been the first, from 1827 onwards, to think of the application of the tubular boiler to the locomotive is … to be ascribed to Marc Seguin". Séguin himself notes that Stephenson and Booth adopted the multi-tubular boiler "22 months after we had taken it out in France".[11] However, it was one thing to design and patent a multi-tubular boiler, it was another entirely to build a practical locomotive. Whilst Séguin had mused over the idea in January 1828, his first locomotive was probably not steamed until a month after *Rocket.* But as Dr. Michel Cotte argues, Séguin had not been under any time pressure to complete his locomotive, whereas Booth and Stephenson certainly were.[12]

The practical implementation of the design was down to Robert Stephenson and his team at Forth Street in Newcastle which included William Hutchinson (foreman), and George Phipps (draughtsman). Three brothers Hutchinson – William, Ralph and Edward – were employed by Stephenson & Co., as well as George's youngest brother John (1789-1831) who would be killed in an accident at the Forth Street works in January 1831 when a sheer legs collapsed. Amongst the apprentices there were Mark Wakefield (who would be *Rocket's* driver) and his brother John (another L&M driver) as well as a young Edward Fletcher, the future CME of the North Eastern Railway. Fletcher would be sent with *Invicta* (Part Two) to the Canterbury & Whitstable Railway and would be the first – perhaps only – driver of *Invicta.* Alexander Fyfe, who would later be Workshop Foreman at the Manchester end of the Liverpool & Manchester Railway, was also employed there apparently as "chief draughtsman and designer" and "made all the improvements in Stephenson's time in the locomotive" including *Planet.* Mark Wakefield was amongst the first enginemen employed by the Liverpool & Manchester and together with Robert Hope and John Dunn "ballasted with *Lancashire Witch"* whilst the line was being built.[13] Wakefield and Hope, together with Ralph Hutchinson, one of the first sent from Newcastle to erect *Rocket,* are recorded as its crew at the Rainhill Trials:

"Ralph Hutchinson, of Newcastle-upon-Tyne, assisted to construct The Rocket at that place, and attended it to Liverpool, where he was invested with the management of it by the late Mr. Robert Stephenson, with Mark Wakefield as his assistant, and Robert Hope as fireman, Ralph Hutchinson being at all times responsible for the efficient working order of the engine."[14]

Mark remained with *Rocket* until November 1831 when he was dismissed for disobeying the orders of the board. [15]There is no evidence to support the fanciful claim by Edward Entwistle that he drove *Rocket.*[16]

Robert Stephenson & Co. traditionally turned to the Bedlington Iron Works at Morpeth, Northumberland, for their heavy forgings, castings and boilers. This shouldn't be a surprise given that the proprietor Michael Longridge was one of the partners in Robert Stephenson & Co. However, due to what would be now termed poor quality control at Bedlington, particularly with regards to their boiler plate, the boiler barrel of *Rocket* was made from the 'Best RB' rolled Staffordshire plate purchased from Messrs. Joseph and William Bennitt of Dudley. [17] The boiler, which amazingly survives over 190 years later, is 6ft long and 3ft 4in in diameter and originally contained 25 3in outside diameter copper tubes. It is butt-and strap-riveted together, the two barrels being lap-riveted together. According to his 1892 obituary, William Campbell, who later emigrated to Dallas, Texas, "made the boiler for George Stephenson's *Rocket*". Given he would be about fifteen at the time, he was probably an apprentice boiler-maker.

As the correspondence between Robert Stephenson and Henry Booth demonstrates, considerable difficulty was experienced with keeping the tubes water tight and preventing the tubeplates from bowing out during hydraulic test to three times working pressure – a test which more modern boilersmiths would now consider excessive. Steel ferrules were used to 'clunk' the copper tubes and a total of 24 stays, of four different types, were eventually used to strengthen the boiler.[18] The boiler was fitted with two safety valves: the traditional weight-loaded type and a spring-loaded type mounted on top of the man-hole inspection cover, locked up in a tin case. The spring-loaded safety valve was not a new invention as Blenkinsop & Murray at Middleton in Leeds in 1812 had such safety valves fitted to their locomotives.

In order to check the water level in the boiler, there were two try-cocks at the front end of the boiler and a gauge glass, this probably being the invention of John Urpeth Rastrick and first used on his locomotive *The Agenoria.* Certainly attention was drawn to its use during a visit by George Stephenson, Henry Booth and Charles Tayleur to the Shutt End Railway.[19] Boiler pressure was ascertained via a mercurial pressure gauge mounted at one side of the chimney, one of the trial stipulations. There was no steam dome or internal steam pipe, despite the replicas of *Rocket* built in the 1930s and that by Mike Satow in 1979 for Rocket 150 carrying them. When the 1979 replica required a new boiler, the opportunity was taken in 2010 to provide a more historically accurate boiler, minus the steam dome and internal steam pipe. The number of tubes was also reduced from 90 to 25. The shape and form of the copper firebox saddle was also corrected, creating the most historically accurate replica of *Rocket* to date within modern safety tolerances.

Firebox and draughting

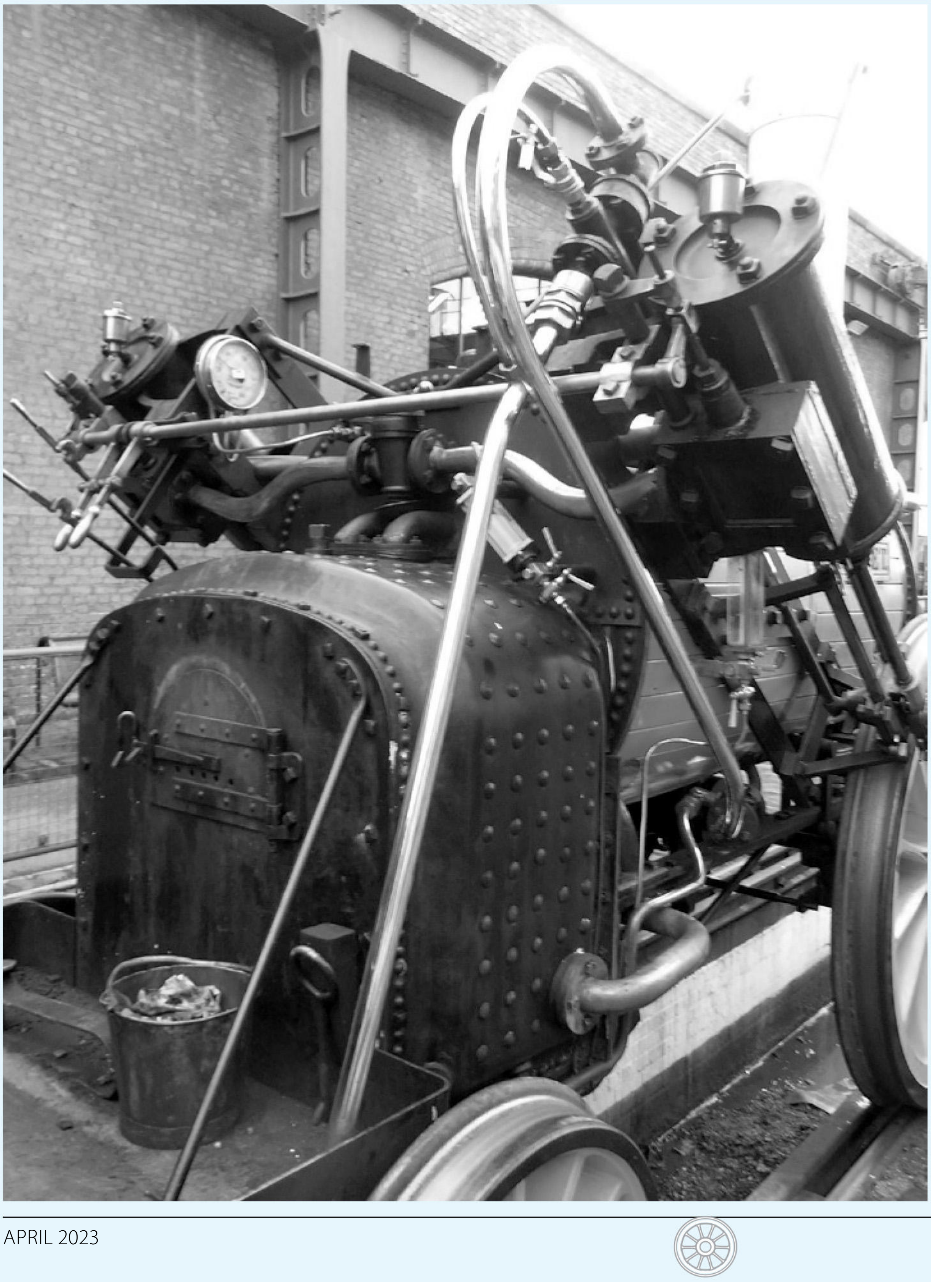
Rocket was such a success not only thanks to its revolutionary boiler but thanks too to having a proper firebox. This was the first instance of a water-jacketed firebox rather than having the fire formed at one end of the main flue. A proper firebox meant that there was ample air flow to enable the coke to burn efficiently as well as sufficient space to develop a good depth of flame and therefore heat. The old-fashioned straight- or return-flue boiler with the fire in one end of the main flue had neither sufficient air flow or space for good flame development leading to a poor steam-raising ability. *Rocket* would have been the first locomotive where the fire burned white hot rather than red or orange of its predecessors.[20]

The copper saddle-shaped firebox water jacket was made in Liverpool probably by coppersmiths John Leishman and John Welsh who would later supply copper fireboxes to Stephenson & Co.[21] The dry back of the firebox was made from wrought iron plate; the present wet back firebox was probably provided 1832-1833 during a major rebuilding of the locomotive. The copper saddle had a water space 3in deep and was supported by copper stays placed every three inches. When delivered it was found the saddle was not quite square which impinged on the geometry of the locomotive, with the right-hand cylinder never having been in proper alignment with the crank pin on its driving wheel! Four outside water pipes (two at the top, two at the bottom) enabled water to circulate around the firebox. John Rastrick, who described the firebox at Rainhill in 1829, noted that it would be difficult to clean out the water space of the saddle – something confirmed by the replica.

The use of a proper firebox with good air flow and sufficient depth to allow good flame development was further enhanced through the use of slightly coned exhaust pipes. Exhaust steam was ducted alongside the boiler in two copper 'Eduction' pipes, which terminated in the chimney with two upturned blastpipes. In order to ascertain the amount of vacuum they created, Robert and his team carried out a series of experiments by fixing a glass tube to the bottom of the primitive smokebox, one end of which was plunged into a bucket of water, the tube being open at both ends. Thus the 'degree of rarefaction' [vacuum] created could be measured by the amount of water drawn up the tube as the locomotive ran. Robert noted: "These experiments certainly showed that a considerable increase of draught was obtained by contracting the orifice, and accordingly the two blast-pipes in the 'Rocket' were contracted slightly below the area of the steam ports."[22]

Immediately after Rainhill, 'team Rocket' took the opportunity to modify and enhance *Rocket*'s blast characteristics. Of *Rocket*'s exhaust arrangements, Robert wrote that "The two separate blastpipes in the Rocket were… turned up separately and contracted very considerably." He was also aware of the action of a single blastpipe in the centre of the chimney: such a blastpipe was "obviously more simple" and "in addition… the jet of steam is further more efficient when brought into the centre of the chimney." Robert, however, was cautious as to the benefits of a single, coned blastpipe in terms of increased back-pressure in the cylinders, which could be quite marked in early locomotives like *Rocket* which had a fixed cut-off of 85%. Twin blastpipes therefore gave a freer exhaust. He also notes that "all the Engines on the Killingworth, Hetton & Darlington Railways" built by his father had the exhaust from both cylinders fed into a single, central blastpipe in the chimney.[23]

Firebox view of the 2009 *Rocket* replica. The back plate of the firebox is made from wrought iron, lined with firebricks whilst the copper 'saddle' forms a water jacket, connected to the boiler with four circulating pipes. The cylinder lubricators and pressure gauge are modern refinements. (Matthew Jackson)



At Rainhill, emphasis had been on fuel economy and reduction of noise. As Peter Davidson (2019) has noted, one of the major criteria for blast characteristics for the previous decade or more had been reduction of noise, with George Stephenson adopting a relatively 'soft' blast characteristic whilst William Hedley at Wylam had used a silencer, much as Blenkinsop & Murray had done at Leeds. However, in order to get more power out of the straight flue boiler, the blast characteristics of Stephenson locomotives would have had to been progressively sharpened, and with the resulting loss of efficiency from ejecting unburned fuel from the chimney. Conversely, a return-flue boiler would have had a softer blast characteristic compared to a straight-flue boiler due to its greater efficiency. As for *Rocket* at Rainhill, "the blast was the softest that would have met the case". As soon as the trials were completed and "there was real railway work to be done" the blast was sharpened significantly by uniting the twin 'eduction pipes' into a single, central blastpipe. In the opinion of Richard Roberts this improvement at least doubled *Rocket's* steam-raising ability: "the speed of the engine augmented from fifteen miles per hour with barely sufficient steam, to thirty with an abundance of that necessary article". The suggestion to do so apparently came from Henry Booth.[24]

Wheels, cylinders, and valve gear

Rocket was carried on a pair of wooden driving wheels 4ft 8½in diameter, which usefully meant that the number of revolutions in ten seconds equalled the speed in miles per hour. The driving wheels preserved with the locomotive are certainly a replacement set and not those which carried it at Rainhill. *Rocket* is recorded as having broken a wheel in Olive Mount Cutting in January 1831 and one wheel was damaged or broken in an accident on Wigan Branch Railway in 1833. Furthermore, the observer James Scott Walker wrote that the spherical crank pin was "attached to a strong spoke of the front wheel", suggesting that they had wrought iron crank-straps fitted between the hub and the rim, similar wheels being used on the four *Rocket*-type locomotives which entered service in New Year 1830. The present wheels are composite with a cast-iron hub with wooden spokes and fellies, with the crank-pin being carried on the hub. The wheels preserved with the engine are of early 1830s construction, either spares sent with it to Naworth Collieries or in-service replacements.

Under the footplate was a pair of cast iron carrying wheels 2ft 6in diameter. However, upon delivery to the Millfield Yard of the Liverpool & Manchester Railway prior to Rainhill it was discovered the incorrect wheels had been sent and instead a pair of waggon wheels, of 2ft 8½in diameter with square-ended axles was used! They were replaced following an accident on Chat Moss (below). The carrying wheel set currently carried by *Rocket* was provided by the Science Museum (then the Patent Office Museum) in 1892.

Rocket was also fleet of foot thanks to direct drive from inclined cylinders to the wheels. *Rocket* was not the first locomotive to use a direct drive to the wheels as Hackworth's *Royal George* of 1827 had done so, nor the first with inclined cylinders (*Lancashire Witch*). The use of inclined cylinders meant that the driving axle could be sprung and thus reduce or mitigate the effect of 'hammer blow.' Its rivals *Novelty* and *Sans Pareil* both used vertical cylinders, largely as a result of James Watt's suggestion that the weight of a piston in a horizontal or near-horizontal cylinder would rapidly wear it oval. Whilst this is true, the effect is not quite as dramatic as Watt feared.

Rocket had, by far, the most efficient valve gear and of the three main contenders. It used a form of slip-eccentric with manual override: *Sans Pareil* used a limited-travel slip-eccentric system, for example. *Rocket's* valves are driven by a pair of eccentrics on the driven axle. They are sandwiched between a pair of cheek plates and are free to move laterally between a pair of driving dogs clamped to the axle (pinned and clamped after 1833). Each dog is set 90° apart to provide fore and back gear. The eccentrics are shifted from left to right using a yoke, worked by a foot pedal and 'J'-spring on the footplate. The eccentric rods drive the valves via a rocking shaft in front of the firebox and side rods, which terminate in drop hooks. These drop hooks can be raised or lowered from the valve handles which, via a rocker shaft running on top the firebox, work the valves directly. This means that the locomotive is started by selecting fore or back gear via the foot pedal and set in motion using the valve levers, setting the valve timing by hand. When the locomotive has advanced several revolutions, the side rods can be lowered on to the pins on the valve rods and the locomotive will proceed happily on its way.[25]

Unlike its other rivals, *Rocket* enjoyed running-in trials at Killingworth Colliery between 2nd and 5th September 1829. These were thanks to George Stephenson's colleague and friend Nicholas Wood, who was also one of the Rainhill judges. With a load of 25 tons (or five times its own weight) up a gradient of 1 in 480 *Rocket* achieved a speed of 8mph and on the dead level at a speed of 12mph. During this period of running-in it was found it "did not work so well in one direction as in the other" so it was taken back to the works "and such alterations made as the experiments made at Killingworth showed were necessary".

Performance

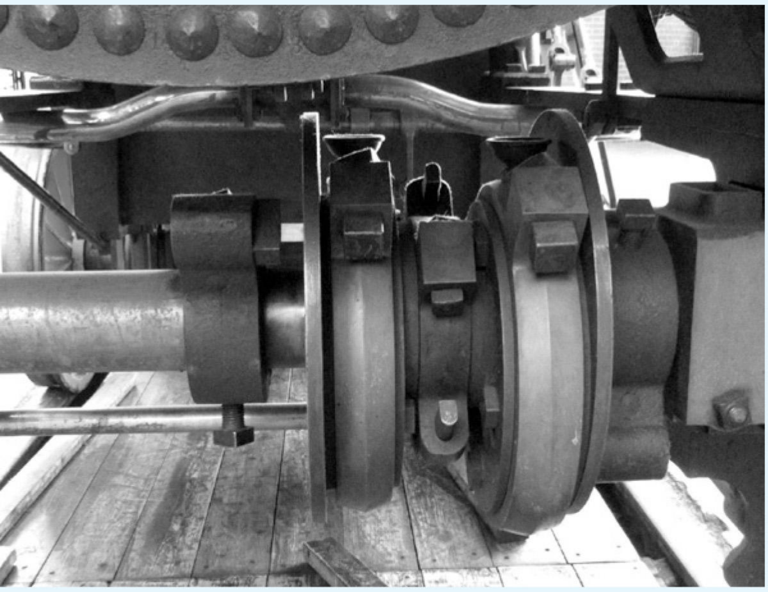
The Rainhill Trials had been organised to empirically settle the question which had dogged the Liverpool & Manchester Railway for years: locomotive or cable haulage. It was not only a forum for the locomotive in general, but in particular for the Stephenson locomotive thanks to the presence of a group of anti-Stephenson directors led by the Quaker James Cropper. The performance requirements of the Rainhill Trials were not particularly challenging: moving a load equal to three times the weight of the locomotive at an average speed of 10mph or more.

Rocket's design speed appears to have been 12mph, with a power output of 10 to 12hp, although modern calculations put this at 14hp. Following modification to the blastpipe after Rainhill *Rocket* achieved 18½hp. According to calculations by Nicholas Wood which suggest that for every horsepower the boiler needed 12 sq. ft. of heating surface *Rocket* needed a heating surface of 120sq ft (36.57m^2) to maintain 10hp. Therefore its heating surface of 138sq ft (42.8m^2) was more than sufficient, suggesting a power output of 11hp. John Rastrick suggests a maximum power output of 12hp: at 50psi both of *Rocket*'s cylinders were capable of producing 6.25hp, running at a speed of 10mph, before any mechanical loss.[26]

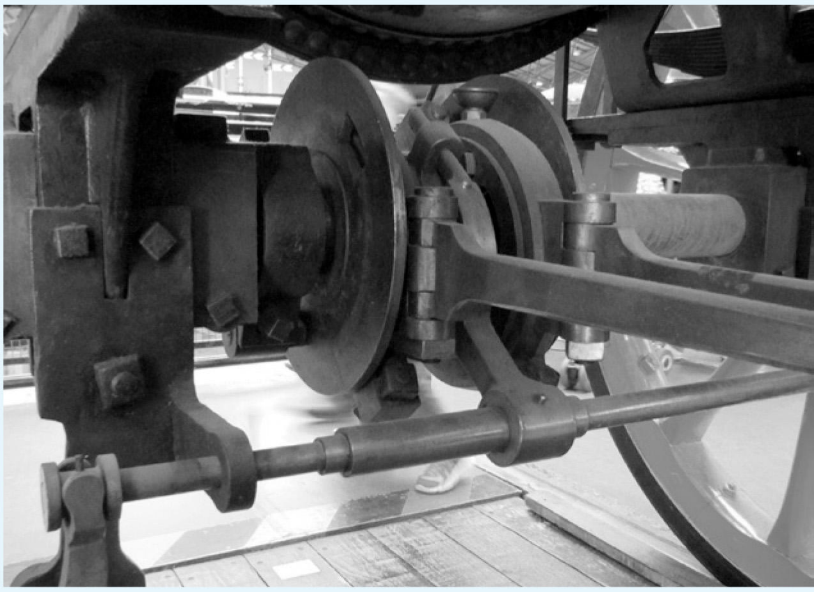
At Rainhill *Rocket* achieved a maximum line speed of 24.1mph or twice the design speed, drawing a load of three times its own weight. Immediately after the formal trials, *Rocket* underwent a further fortnight of testing supervised by Nicholas Wood, Joseph Locke and Robert Stephenson. Driving and firing techniques also improved and *Rocket's* performance during these experiments far exceeded those during the Rainhill Trials themselves and received international reportage. *Rocket* "drew after it, on a dead level, 40 tons, at an average rate of 14 miles an hour, being more than three times the weight which it drew at the rate of 12½ miles per hour when competing for the [Rainhill] prize." In order to ascertain its hill-climbing ability, *Rocket* was run up the Huyton Incline of 1 in 96 at a speed of 8mph with a load of 18 tons.[27] The *Liverpool Mercury* reported on Friday 30th October how both *Rocket* had been "materially improved" and "perfected" and was run on Saturday 24th October 1829 with a load of 20 tons, at the rate of 18 to 20mph. During the following week it had drawn the "astonishing load of 42 tons" on the level equating to ten times *Rocket's* weight at a speed of 14mph. With a load of 16 tons it ran up the 1 in 96 Huyton Incline at 12½mph. The *Leeds Intelligencer* reported how under trial *Rocket* had "travelled at the rate of 28 miles an hour, average velocity 22½ miles". Unfortunately no load was stated.[30]

On 28th December 1829 *Rocket* was run across Chat Moss with a "train of several carriages and about forty passengers" at an average speed of 16mph and "on the return trip attained a speed of 30mph". The load is not given. *Rocket* "crossed and re-crossed the Moss" but, on the final return run toward Manchester, near Eccles, "it was 'thrown off the road" whilst travelling "at a rate of twenty-four miles an hour" when one of its iron carrying wheels broke. The "water carriage" and "some of the wagons" were derailed but none of the "forty individuals riding in and upon the wagons… received the slightest hurt". *Rocket's* carrying wheel-set and axle had 'been previously injured by a carriage purposely thrown off the railway' and *Rocket* had been 'incautiously' put back in service still carrying this damaged wheel and axle. *Rocket* was speedily repaired and "a fresh wheel was substituted for that which was broken, and in three quarters of an hour, the engine was again started, and performed its work with accustomed facility". The experiments were continued the following day, *Rocket* drawing a load of 35 tons "with which there was not the least sinking" into the Moss. Four months later in April 1830 it was involved in further

The eccentric cluster on the *Rocket* replica at the NRM: the eccentrics are on a sleeve free to move laterally between a pair of driving dogs, clamped at right-angles to each other to provide fore and back gear. The driving dog engages in a slot in the eccentric cheek.



A second view of the eccentric cluster, showing the two eccentric rods (one per cylinder) and the yoke which is operated by a pedal from the footplate, which shifts the eccentrics laterally.



load trials on the Moss when it hauled a load of 45 tons, “this being by far the greatest weight that has yet been conveyed across the Moss” at a speed of just over 15mph.[31]

Working replica of *Rocket* on display on a rather wet day at the S&IM, Manchester, accompanied two of the six coaches built using second-hand materials by the LMS in 1930 to run behind *Lion*. Although we are used to seeing *Rocket* pulling passenger coaches, in real life it only rarely worked such trains. (Matthew Jackson)

‘Rocket’ at work

Thanks to the 1980 replica of *Rocket* pulling one or two of the 1830s-style coaches built by the London Midland & Scottish Railway to run behind *Lion* in 1930, the image of *Rocket* working passenger trains has entered public consciousness but it is unlikely that *Rocket* was used in revenue-earning service. From January 1830 it was obsolete following the delivery of its sisters *Arrow, Comet, Dart* and *Wildfire* aka *Meteor*. As the present author has described, *Rocket’s* Rainhill fame meant it was the ideal choice for use in public relations exercises during autumn 1829 and throughout the summer of 1830. These PR exercises provided to be highly beneficial in normalising and popularising rail travel but also importantly in making allies of former opponents, including the influential Lords Sefton and Derby, and MPs such as Thomas Creevey. John Moss the deputy Chairman concluded that these excursions had “so opened the eyes of the canal people, the land-owners and the public that almost everyone is desirous to get into a railroad...”[32] They also helped the company financially, too, with share prices rocketing from £118 to £175 and selling for high premiums. One of the most glamorous travellers on one of these summer excursions was the actress Fanny Kemble, but whilst *Rocket* was indeed used on these trips, it’s not clear whether it was *Rocket* which was the “little fire-mare” which she felt “inclined to pat” as Miss Kemble does not name the locomotive in question.

Rocket was only rarely used in front line service. Certainly, following the delivery of its four sisters in January 1830 it was obsolete. It was primarily used on ballast and permanent way duties on Chat Moss for twelve months from October 1829. It was also a very unlucky engine, being involved in two fatal accidents (three if one counts an accident whilst working at Kirkhouse). Famously it was involved in the fatal accident to William Huskisson on the opening day (15th September 1830). Then, on the evening of Thursday 28th October 1830 Henry Hunter, a 31-year-old publican who, “despite the repeated remonstrances of the engineer” had got into the habit of cadging a lift on *Rocket’s* tender, was killed when the tender derailed. One of the tender axles broke and the 300-gallon water cask fell on him, crushing him.

During December 1830 it was used as the station pilot. The board ordered on 11th October 1830 that a pilot engine be sent ahead of passenger trains after dark. A powerful ‘coal lamp’ [ie coal gas lamp] and reflector were fixed to the tender, lighting the way for the train which followed. On one occasion the pilot engine, *Meteor,* had been running too far ahead of the following passenger train and platelayers had attempted to bring a lurry (a small four-wheeled waggon) across the track after it had passed. *Meteor* collided with the lurry and was thrown off the rails, but luckily “*Rocket*… which was at work in the neighbourhood” was used to take the train on to Manchester. [33]

During November and December 1830 the opportunity was taken to modify *Rocket,* to bring it more in line with its newer sisters. This included:

- Provision of a steam dome and internal steam pipe
- Fitting of a wet-back to the firebox replacing the original dry-back and attendant water pipes.
- Fitting of a smokebox with ash box below and a shorter chimney
- Removal of the mercurial pressure gauge (it was later used in Edge Hill works to calibrate safety valves).

Rocket went back into service in New Year 1831, but on Tuesday 25th January 1831 it was involved in another serious accident when it derailed in Olive Mount cutting and turned over on its side whilst hauling the 2.00pm second class train to Manchester. One newspaper reported how it had been “incautiously put on the road at Liverpool after the Engineer had reported to the person having direction of such matters one of the axles was much bent”. It started out from Liverpool but upon reaching Olive Mount Cutting: “It came through a crossing, when the wheels not being true, in consequence of the bent axle, they stuck in the points with such violence that the engine was dashed over on its side, throwing off the engineer and fireman, neither of whom, however, was in the least hurt.”[34]

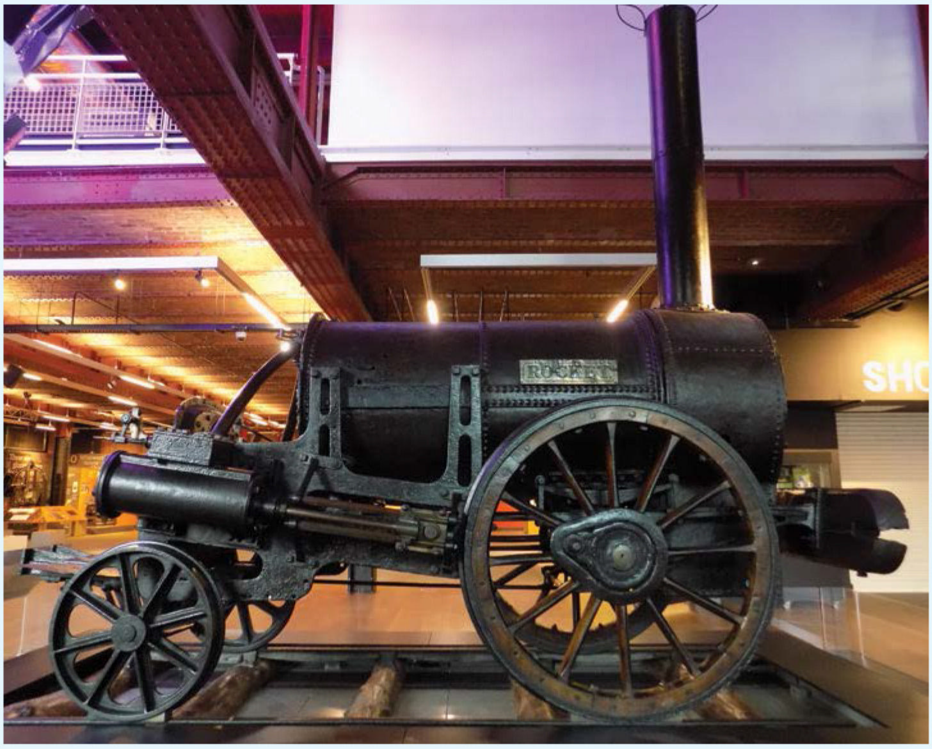
It was taken to Edge Hill works for repairs, and it appears that the cylinders were lowered to their present configuration as part of this work. The artist Isaac Shaw visited the railway workshops in February 1831 and saw “the old conquering hero, the *Rocket*, undergoing repairs, and having its cylinder and piston dropt”.[35]

With the opening of the Wigan Branch Railway in September 1832, which was to be initially worked by the L&M, *Rocket* was hired to the Wigan company. It was whilst hired to them that it was involved in yet another accident. At 8.30am on 6th November it collided head on with coal train: “the two engines running against [each] other”. None of the passengers in *Rocket’s* train was hurt but “the Engine and Tender were much damaged.’ The L&M sought legal counsel and upon investigation it transpired that the accident was the fault of the Warrington & Newton Railway whose coal train it had been which had collided with *Rocket.* The L&M sought damages to cover the cost of repairs (£74 14s 7d) and legal costs (£18 15s 10d). Following lengthy legal wrangling the Warrington & Newton paid only £50, leaving the L&M Board arguing how best to recover the outstanding sum.[36] It was repaired by John Melling (1781-1856) at Edge Hill Works. He was admonished for fitting “a great deal of unnecessary ornamental Brass Work” to *Rocket.* In future such work “could not be permitted”. What was required were “good & substantial workmanship... with as little unnecessary expence as possible”[37].

Following this period of repair, *Rocket* appears to have been little used: it was hired to Richard Badnall for his experiments on his eccentric theory of an undulating railway and as a test bed for Lord Dundonald’s unsuccessful rotary steam engine. After this there is no record of *Rocket’s* use in the archive until in June 1836 Henry Booth reported that he had received an offer to purchase it. This wasn’t the first time the board had been approached to sell *Rocket:* Thomas Legh Esq. of Lyme Park had approached the company with a view to purchasing *Rocket* to work his coal trains in October 1831 but had been rebuffed. The board ordered that a ‘good drawing’ be made of *Rocket,* "to exhibit the form and construction of the first Engine employed on the Rail Way".[38] James Thompson, the Agent to and on behalf of the Earl of Carlisle, the owner of the Naworth Collieries, purchased *Rocket* and its tender for the sum of £300 on 24th October 1836, including a spare set of wheels.[39] In the following year it was acquired outright by James Thompson but was out of use by 1839 and remained at Kirkhouse Colliery until 1851. Whilst at Kirkhouse it ran over and killed a young boy who ran out in front of its and on Election Day 1837 apparently reached a speed of 35mph carrying election returns, a speed which was considerably exaggerated down the years to 60mph![40]

During 1851 Robert Stephenson had the idea to display both *Rocket* and *Locomotion* together with one of his most modern locomotives at the Great Exhibition in Hyde Park. This initiative, however, faltered and ended in a lengthy legal dispute, with *Rocket* lying dismantled at the works of Robert Stephenson & Co. At a visit of the Institute of Mechanical Engineers in 1858, "many parts were wanting to make a complete engine" and "the boiler… together with some of the gearing,was stowed away in one of the yards", *Rocket* being devoid of wheels or chimney.[41] Finally, in 1862 it was acquired by the Patent Office Museum for public display in London. It remained on display in London until temporarily removed to Liverpool between April and November 1980 to mark the 150th anniversary of the Liverpool & Manchester Railway. It visited Japan in 1998 and was on temporary display at the National Railway Museum in 1999. More recently *Rocket* returned home to Newcastle in 2018 and was displayed at the Science & Industry Museum, Manchester, 2018-2019, before finding a new home at the NRM in York.

(to be continued)



***Rocket* returned 'home' to the Liverpool & Manchester Railway when it visited the S&IM Museum, becoming a star exhibit. The lowered cylinders, smokebox and buffer beam are all in-service modifications dating from November /December 1830 and February 1831. The wooden driving wheels are also in-service replacements.** (Ian Hardman)

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ENGINE AND BRAKE VAN TO SHIREBROOK

AN UNSENTIMENTAL REFLECTION ON WHAT LIFE WAS LIKE FOR A FREIGHT GUARD IN THE 1970s

PART TWO

AS TOLD TO **M. G. SADLER**

Getting the job done

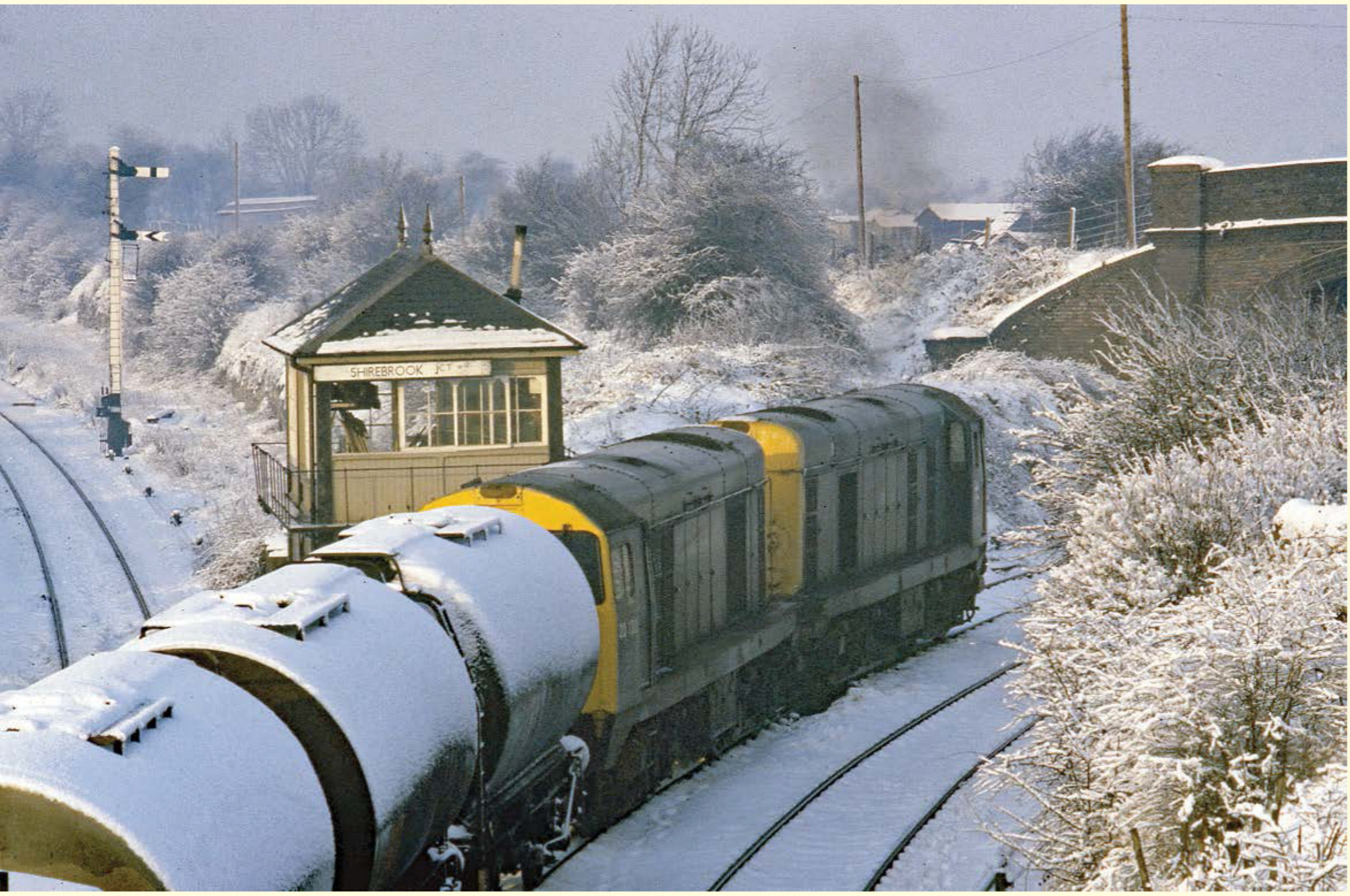
Shirebrook depot took pride in being acknowledged as part of the railway which did what it took to get the job done without recourse to disputes or undue interference. Clearly engaging in dangerously unsafe operating practices to achieve that was not in anyone's interest but it was a fact of life that short cuts were taken for the benefit of the staff which were not strictly in line with the requirements of the Rule Book or methods of working. The main objective was to save time and this could be achieved in a number of ways. At Rufford, for example, it was common practice to fly shunt the brake van into the locomotive shunt neck to avoid the need for a run-round movement with the train engine. Provided the handbrake was functioning correctly it was possible with expert judgement to stop the van past the points and neatly in the headshunt ready for the train to be backed on to it. On one occasion our guard found the handbrake in the van not up to the task and ended up pushing the stop blocks back a couple of feet. It was also possible at some locations to reduce the number of shunts needed to make up a merry-go-round (MGR) train. The theory might state that 30 wagons should be put together as twelve plus twelve plus six in three shunts but the trick was to do it in two fifteen wagon moves.

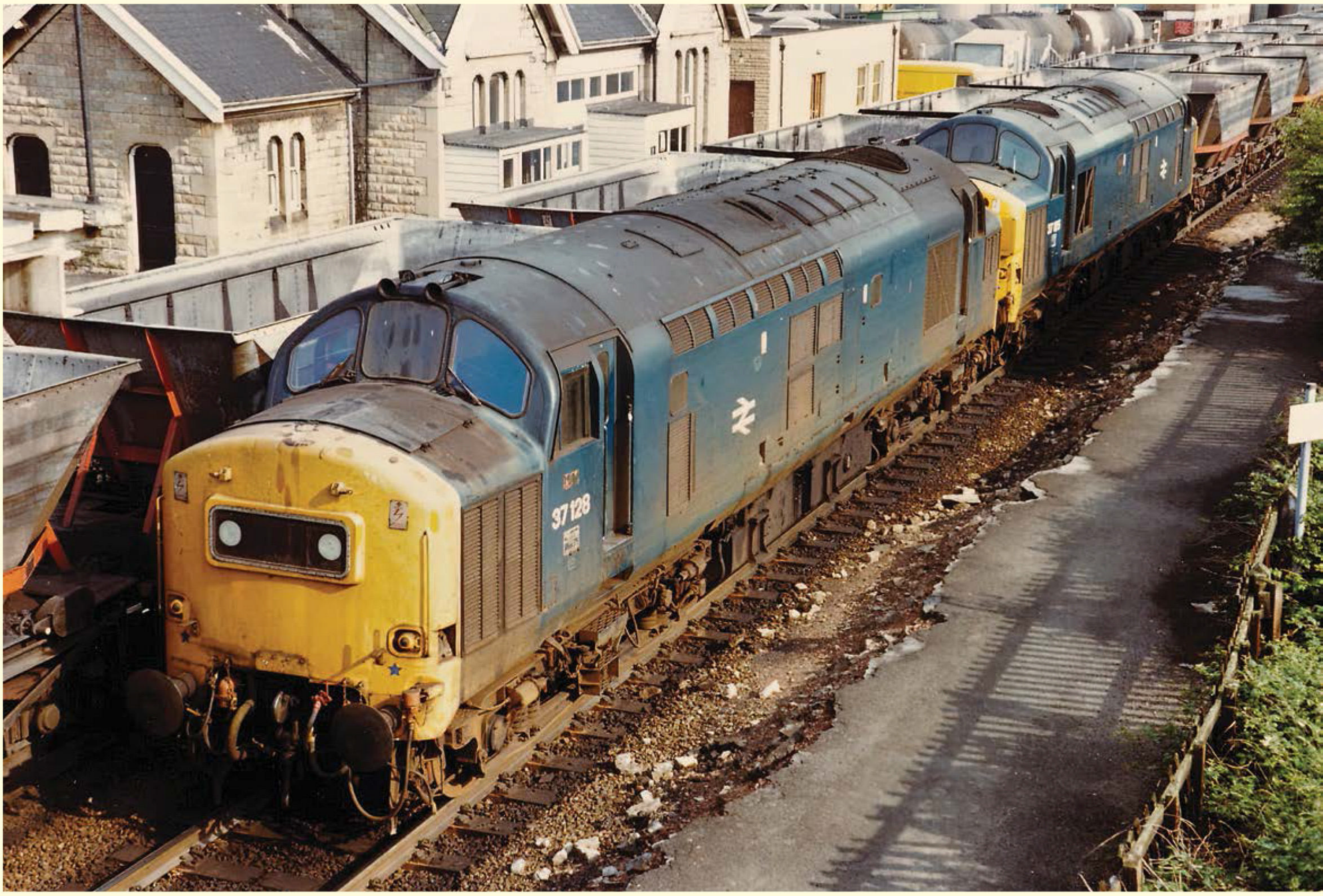
The critical factor for the guard to consider was the nature of the gradient. A short cut at Thoresby was rather than the guard and shunter working together to put empties away into the colliery and then preparing loaded trains to be taken out with the pilot one by one into the British Railways sidings at Thoresby Junction, a division of labour was sometimes implemented. The resident shunter would deal with the empties while the guard would go and prepare the loaded trains, which could be as many as three or four. When the pilot and shunter had dealt with the empties they would come into the loaded sidings, attach to the first loaded train and take it into the BR sidings. On arrival there the driver would give several whistles on the locomotive which indicated to the guard that the branch was clear. The guard would then release the handbrakes on the next train which would be allowed to run out on to the branch. This was safe because the line ran into a swilley (a mining term for depression or hollow) which meant the wagons would come to rest well before reaching any running lines. The pilot would then come back to attach to the second train and draw it into an empty road. A further set of whistles would tell the guard the branch was clear for the next loaded train to be released in similar fashion.

At Welbeck Colliery where multiple run-rounds were necessary when making up trains, many minutes could be saved using the secondman who was present for the driver's physical needs break, particularly when the power provided was in the shape of two Class 37s. With the driver in the front cab and the trainman in the rear cab of the second engine acting in concert and each taking control when required many laborious loco shut down and change ends procedures could be avoided.

Lastly the guard when working a fully fitted six-speed MGR train, provided he had satisfied himself that the brakes were operative on the three vehicles next to the engine when he uncoupled it prior to

On 15th December 1981Class 20s Nos.20 025 and 133 take the route towards Warsop Junction past Shirebrook West Junction signal box. The two Class 20s had previously arrived propelling a brake van and were now taking three empty traction gas oil tanks from Shirebrook depot back to Mansfield Concentration Sidings so that they can be formed into a Tinsley service for return to a refinery. (Malcolm Rush)





running round, would not always return to what would then become the rear of his train to carry out another brake continuity test. In such situations drivers subsequently scrupulously obeyed the rules regarding running brake tests.

Why were staff apparently relaxed about this safety culture? In a way certain standards of behaviour were expected. For instance, the practices described above would not be applied on your first day in the job. You made sure you learnt well from old hands, especially resident shunters who had an intimate knowledge of their location which they were happy to share. You were taught to be aware of the real physical dangers of being in a moving traffic environment. You built up your knowledge and confidence which enabled you to understand what could be done and what was too risky. You trusted the people you worked with day in and day out in an area which saw very few crews from other depots. And you understood the railway well enough to know not to try a risky move in places where it might be seen and reported.

A similar relaxed attitude applied to the consumption of alcohol. A drinking culture was embedded among managers and men alike, particularly affecting Friday afternoons, night shifts and weekends. This behaviour was the norm, excesses were tolerated and egregious cases covered up.

Operational safety

As previously stated, the LD (as the area was known by railwaymen - see Part One) was mostly self-contained in that the area had very few instances of other depots working into it and no booked passenger services within its confines. Shirebrook was a 'coal' depot and vital to the many collieries it served to distribute its product far and wide which was important for the financial stability of the local mining communities. This, by nature of its work, made the train working relatively low speed with a mix of 6, 7, 8 and 9 speed trains. The fastest trains operated on a regular basis were 6 speed empty HAA coal wagons at 55mph. The main line track throughout the area was generally kept in good condition and the colliery branch lines perfectly adequate for the speed limits in operation over them. Also, most of the colliery branch lines were worked under One Train Only regulations with or without a train staff controlled by a signal box, so collisions were unlikely. This led to very few major main line incidents during the period, with most mishaps occurring within colliery sidings and rail yards.

A rare sight on 18th June 1981: the job stopped at Shirebrook. On the up main No.56 009 has brought a train of MGR empties to a stand adjacent to the depot for traincrew relief with the rear of the train foul of the junction at Shirebrook West. Meanwhile Nos.37 128 and 105 (both of Tinsley), hauling another empty MGR set, are waiting on the down main for the route to be cleared towards Warsop Junction. In all probability the two Class 37s were hauling the return Northfleet empties for Welbeck Colliery which typically got traincrew relief on the running line outside the depot to man the next round trip between Welbeck and Toton. (Michael Hart)

However, there were two significant events on the same stretch of running line. The first one at the end of the 1970s was the derailment of a Whitemoor service of coal in a cutting towards Fledborough which was spectacular in that it filled the cutting with wagons and coal and took several days to clear. This isolated High Marnham Power Station with no trains able to serve it for a week or so. The cause of this was a track fault (cyclic top) with possibly other factors such as speed adding to its severity. The second was another plain line derailment, on this occasion at Clifton-on-Trent in February 1980, again with speed as a contributory factor. The track damage caused by the loaded mineral wagons was sufficient to persuade management to permanently close the line east of High Marnham to Pyewipe Junction, Lincoln.

Signals passed at danger (SPAD)

During this period it was a rare occurrence for a driver to be disciplined for a SPAD on the LD area and surrounding railway. They did happen, and our guard has personal knowledge of two whilst he was on the locomotive. The first of these was in broad daylight on a light engine returning to depot from Mansfield Concentration Sidings approaching the directing signal outside Warsop Junction Box which was at danger.

The driver was approaching the signal at very, very low speed, perfectly aware that the signal was red but for some unexplained reason didn't apply the brake until adjacent to the signal and slipped a few yards past. Omitting the industrial language, the exchange between signalman and driver was brief along the lines of: "What are you doing" – "Sorry, mate, not concentrating" – "Well, you bloody well should be" – "Are we saying anything?" – "No, not this time". Incident closed.

The second example was at night- time on a returning empty train from West Burton approaching Worksop Station. The three-aspect colour light signals had progressively slowed the train down through the green, single yellow and red signal sequence and in the dark from a very low speed the driver misjudged the distance and slipped about 2ft past. For some reason the driver asked our guard to talk to the signalman so he got off and used the signal post telephone. After the usual train identifying preamble the exchange went :"Sorry, the driver has just slipped by a couple of feet" – "Has he? Well, it's not showed up on my panel" – "Oh, it's only a few inches" -–"It must be because you haven't hit the overlap section" – "Are we saying anything, then?" – "Well, until you told me I wasn't aware of it so no, wait for the signal." Conversation ended. Also, lesson learnt: if in the same circumstances again first check for where the overlap circuit starts.

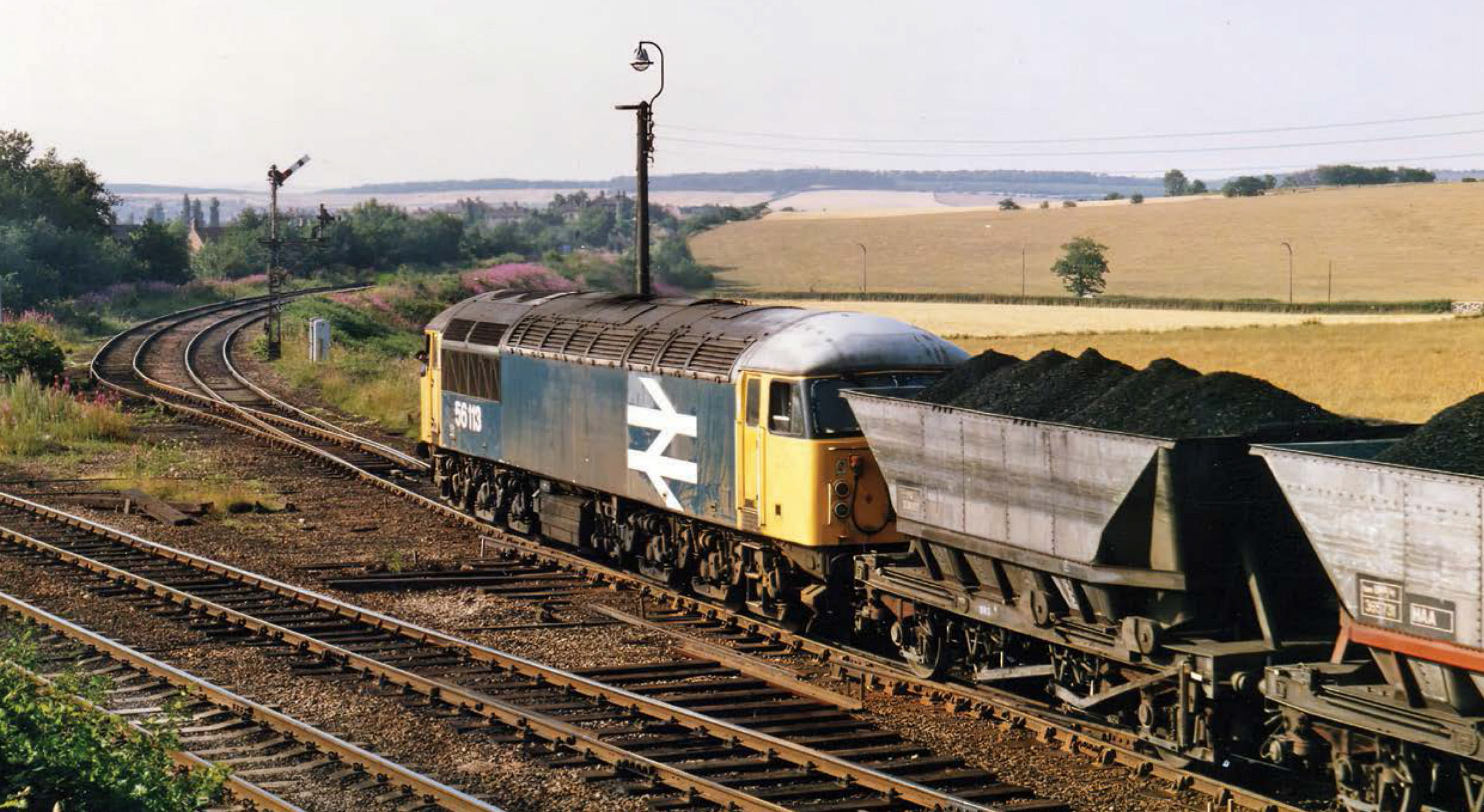
There were also near misses. One such occurred one night having left the depot at 23.45 running light diesel to Mansfield Concentration Sidings to pick up a train for Toton. Approaching Welbeck's home signal speed was no more than 20mph but the engine was not slowing down. Our guard glanced across at his driver and realised he was fast asleep with his chin resting on his chest. (It was known that he often swapped his turn for a night shift to accommodate his daytime labours on his window cleaning round so perhaps fatigue had got the better of him.) A loud cough did not have any affect, so our guard got up, reached across and shut the power handle. This action roused the driver who hurriedly braked in time to stop at the home signal. Words were exchanged and a strong opinion was given that the driver had better focus on the job in hand if they were to get safely to Toton and back.

Occupational hazards of working Class 9 trains

Loose-coupled train working at the start of the decade accounted for roughly 50% of our guard's link working. The majority of this would be Class 8 working with a fitted head (braking power provided by a proportion of wagons marshalled next to the train engine) adding brake force to that of the locomotive. However, there was still a considerable amount of Class 9s which relied on locomotive braking only, assisted by the guard applying the brake van hand brake when appropriate. These were in the main local trips between colliery and marshalling yard but did on occasion travel further afield.

Towards the end of 1970 when our guard had learnt most of his allocated routes, he was placed in his link position. The roster clerk would then check in advance for any turns coming up for which he did not have route knowledge, the plan being to send him route learning the week before. This happened in the last few weeks of the year when a ballast trip job between the LD and Beighton Sidings was next up and accordingly he was rostered to route learn on the afternoon turn the week previously. On the first day the weather was typical of winter, cold with a drizzly rain that made working conditions miserable. The last trip of the day was to work a loaded spoil train of spent ballast to Beighton Tip and return to depot light engine. Traction was a Class 31 hauling unfitted wagons so it would run 9 speed (25mph). The guard working the train had a couple of years' experience. When they set off for Beighton the weather was at its worst, but the brake van was warm and no problems were anticipated en route. The journey was uneventful and going to plan until Kiveton Bridge after which there was a falling gradient over three miles to Woodhouse Junction where Beighton Tip was located – journey's end. The first part of the route from Kiveton Bridge was in a cutting with the second part being on a tall embankment. The train went through the station at a very steady speed and then started to go downhill. The brake van hand brake had been applied to provide what little braking assistance to the train it afforded.

It soon became clear that speed was increasing to well above train speed and the locomotive whistle could be heard in the distance alerting Brookhouse Colliery Box that the train was running away in the right direction. Our guard got himself wedged in one of the ducket seats and strangely had to advise the train guard to do the same for his personal safety. At the time he was pacing the brake van and going in and out on to the rear veranda. It quicky became obvious by word and deed that the train guard was extremely concerned and was advocating that they should both abandon the brake



July 1984 and No.56 113 is propelling a loaded MGR set off the Welbeck Colliery branch on to the down main with the driver keeping an eye on progress. The train had previously been drawn the two miles from the colliery on to the outbound line (right-hand line in the middle foreground) and then run round. Welbeck was another of the NCB's 'big hitter' pits. The previous financial year it had mined 1.1 million tons from the Top Hard seam. (Robin Stewart-Smith) van and jump off into the pitch-black night for safety. Our guard, even with his limited experience, could not see that being the best course of action, pointing out that it would certainly lead to injury, possibly serious. When he heard the safety rail on the veranda being opened, he felt action was needed. Our guard went and used all his persuasive skills, and a little bit of physical intervention, to get the train guard into the van and sitting down.

After explaining that hopefully Brookhouse Colliery would have wired us forward as 'running away in right direction' and the Woodhouse Junction signaller would have acted accordingly to clear the route ahead to avoid collisions, our best and safest course of action was to stay in the van. Also, if he was jumping, he would be on his own. After that, whilst agitated, the train guard remained seated and the train did pass Woodhouse's home board which had been cleared, coming to a stand a fair way past the points that led to the sidings in which the train was to be detached. After a check that everyone concerned was all right, a discussion with the signaller took place and a method agreed that allowed the train to be detached as booked and away light engine to home depot.

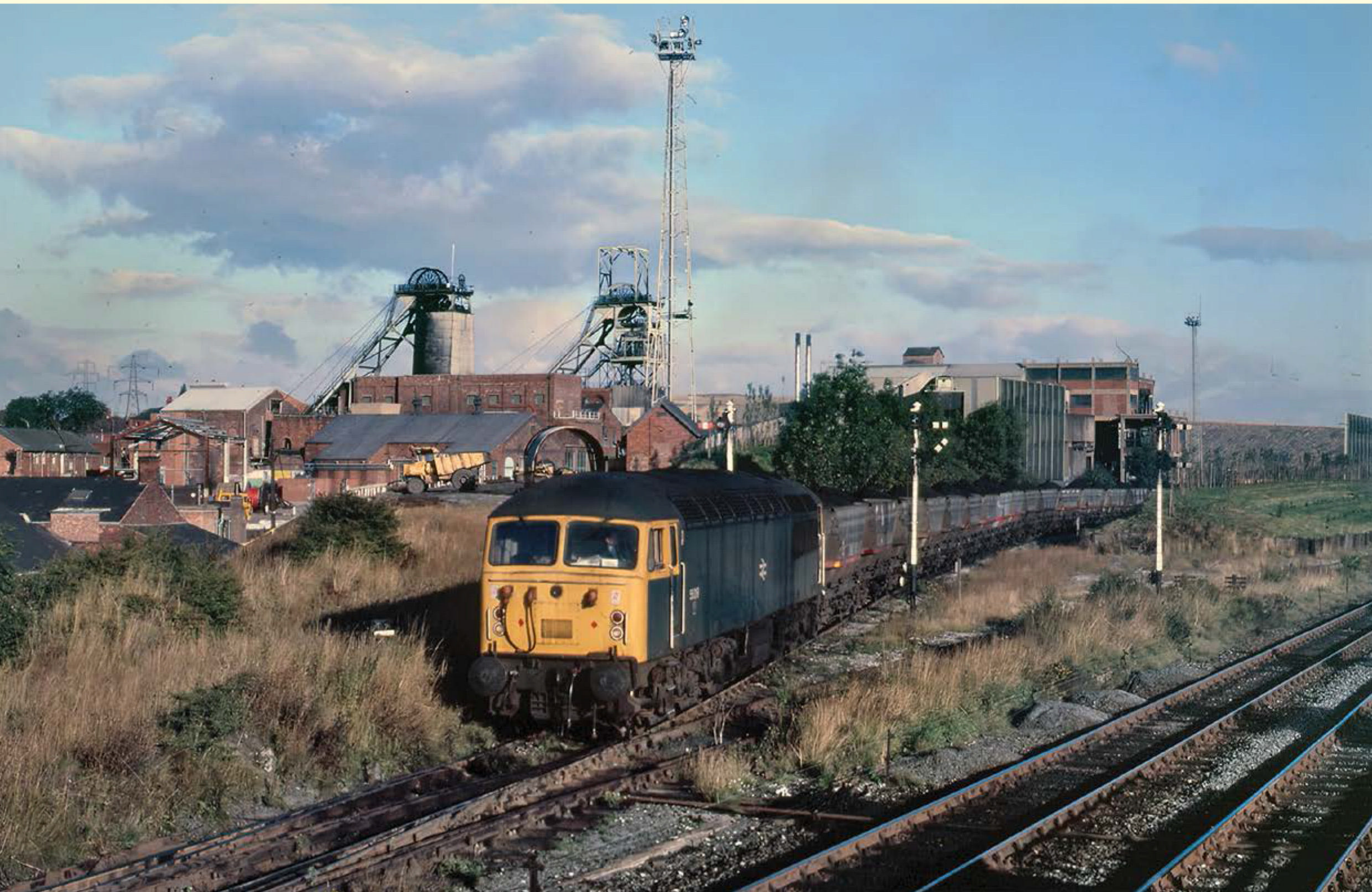
After having been involved with a 'running away' event within a year of starting, our guard hoped it would be the last one. That was not to be. In the middle of the decade for some reason there was a glut of house coal in the LD area for London and it was too much for the booked Toton turns to clear. This was influencing empty wagon availability, there being only a finite number of wagons available and if these were under load and not moving then shortages would occur. To clear this surplus, it was planned to run several trains from Mansfield Concentration Sidings to Toton one Sunday morning in the middle of winter. Our guard was rostered to work the first of these and traction was a pair of Class 31s to maximise the load due to no fitted head being available.

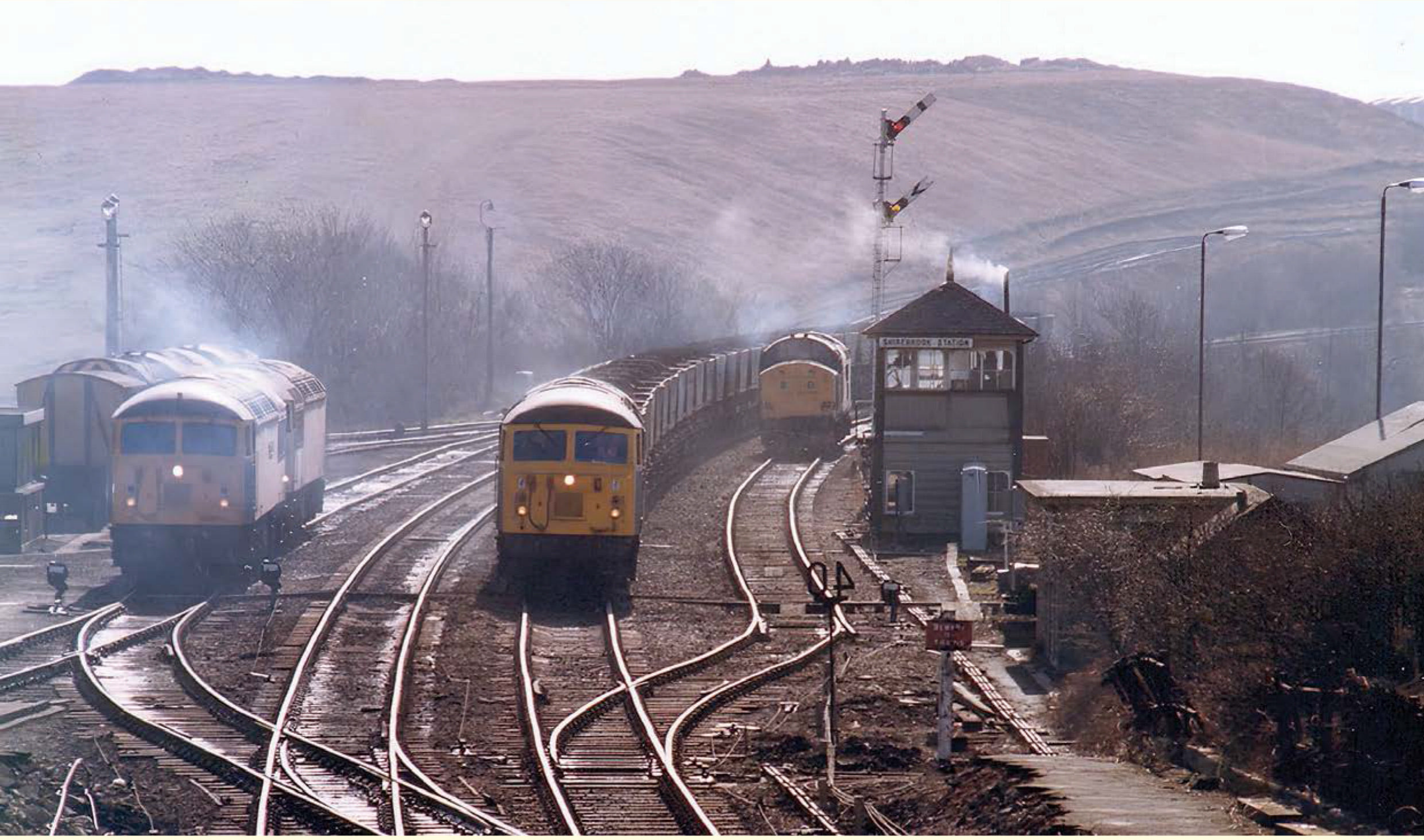
Sign-on time was around 06.00 and there was a heavy overnight frost making rail and ground conditions poor. With the train prepared at Mansfield Concentration Sidings it was about 07.15 away and an hour later the train was approaching Kirkby Summit. From Kirkby the line bears right down to Pinxton and Pye Bridge and the gradient is quite severe at 1 in 100 falling for four miles to Pinxton, levelling out before Pye Bridge. In mid-week there would have been a pair of Class 20 locomotives deployed at Kirkby to attach to the front of loose-coupled trains to provide additional brake force to maximise loads. These were not available on Sunday.

On approaching Kirkby, the weather was still freezing and our guard's train would be the first over the route for some considerable hours, so rail head conditions could be expected to be poor. The train went past Kirkby and down the bank at about 20mph and all seemed well for a few hundred yards and then suddenly train speed increased significantly. Within a matter of yards it had more than doubled. Obviously, another 'running away in right direction' incident was developing. Our guard was not concerned about hitting another train since his was the first of the day, but rather whether Pinxton would have operated the level crossing gates before the train's arrival. On passing several minutes later he noticed thankfully they had been. As the track levelled out the driver got control of the train and the journey into Toton continued without further incident.

On arrival at Toton the train was detached and due to an empty wagon shortage, a return to home depot light engine was ordered. On travelling back, the ride was uncomfortable and noisy due to excessive wheel flats caused by a previous lengthy full service brake application made in an attempt to regain control of the train. This caused some considerable consternation to the driver because Pinxton had not reported ahead that the train was actually 'running away' and he was unsure how to explain how the wheel flats had occurred without a report of running away being made. Our guard left him to ponder

No.56 019 leaves Sherwood Colliery with a loaded MGR set (almost certainly for Ratcliffe power station) on 18th June 1981. This loading point was only five miles from Shirebrook depot but within the London Midland Region boundary. When the nearby Kirkby depot shut in 1970 it was more economic to transfer the work to Eastern Region Shirebrook traincrew who had route knowledge to Trent Valley power stations. Sherwood Colliery never had a rapid loading bunker and was traditionally served by a slip working arrangement (inward empties detached and preloaded train attached). Latterly trains were loaded from a pad by high-capacity loading shovels while the train engine was in attendance and moving the train as required during the process. (Geoff Dowling)





On 6th March 1985 No.56 004 passes Shirebrook Station signal box heading 6F45 from Shirebrook Colliery to Cottam Power Station. Nos.56 074 with 56 113 behind wait on the depot engine line ready for their next jobs. No.37 215 stands in the down refuge siding. This shot was taken at midday on a Wednesday with plenty of diesel exhaust in evidence (with a contribution from the coal fire in the signal box). On Monday mornings when the full complement of locomotives on the depot were started up after the weekend the air must have been heavy with emissions and the smell of burnt diesel oil. (Keith Partlow)

that one for himself, not having any pearls of wisdom to offer other than telling the truth, but the driver did not want to admit he had lost control of his train.

Personal mishap (more haste less speed)

During his career our guard was responsible for one major safety error which happened whilst working at Sherwood Colliery. The turn was an MX 00.45 sign-on for full crew and worked LD to Sherwood, Sherwood to Ratcliffe PS, discharge and return empty train to Sherwood Colliery. The driver on the turn was an avid football fan and his team was at home on the Saturday afternoon, so he wanted to go to watch them but would like some rest before the match. All the traincrew therefore agreed to come an hour or so early for the Saturday turn to get a flier and reach the power station before other booked services. It was a fair bet that a locomotive would be available early due to winding down for the weekend.

Everything worked well; early off the depot, traffic ready loaded at Sherwood, terminal operations at Sherwood went well with no delays, left early, arrived Ratcliffe to an empty power station, straight through the discharge hopper and back at Sherwood for about 05.00, well early. Arrival at Sherwood from Ratcliffe on the down main and access to the empty sidings was through a ground frame released by Sherwood box. The layout at Sherwood empty sidings was that adjacent to the down main was a dead-ended down refuge siding and the empty sidings were next to that with several double-ended roads. Only the first three next to the down refuge siding held a full set of HAA wagons. There was a train of empty mineral wagon stabled in the down refuge. The ground frame was operated and set for an empty road that could hold the full train.

Our guard then signalled the driver to set back, which he did with some urgency. The guard was now in a position of safety but not looking at his train when he heard a tremendously loud crash and continued screeching of metal. His train was in the down refuge mixed up with the empty mineral wagons. He obviously hadn't checked the points were correctly set for the empty siding. But why wouldn't they be laid right because the wagons in the down refuge had been there several months and he had trailed through them only four hours earlier when preparing the loads. As to who had operated them in the early hours of the morning he knew not, but no other train had been in since he had left.

There were many upset people that early morning, one being the driver who would not get his rest, another was the Traincrew Supervisor who would have to sort out the shunting of the tool vans in a very full depot with engines stabled for the weekend, but the majority were local residents. Across the main line was a row of terraced houses that overlooked the railway and it was almost comical to see the lights in the bedrooms going on one after the other all down the road. The usual response of 'No Knowledge' to a formal request for information from the Area Manager's office was not going to get him out of this mess.

Working relationships

Shirebrook was a harmonious place to work. It had a collegial spirit. Indeed, Worksop men working south past the depot would look up at the traincrew accommodation building and remark with only the merest hint of sarcasm that they were passing 'Happy Valley'.

Fall-outs with management were rare. There was a mutual respect for the respective roles that had to be taken and differences were usually resolved. Supervisors had their foibles, but you learnt to live with them. Signallers by and large were minded to work with you for the good of the job and drivers, guards and shunters saw themselves as part of a close knit team. The key factor underpinning all these connections was the sense of self-containment felt by the men. The thinking was we are here to move coal in north Nottinghamshire and we don't need others to come in and do it (notwithstanding the fact that Toton men worked into a small number of pits in the Mansfield area). This in turn led to the perception that Shirebrook was almost a separate railway to the rest of BR. This was reinforced by the practice of Shirebrook crews keeping their engine for their back working after running out of their area. They hardly ever went into a foreign depot's messroom to take a physical needs break while waiting for a fresh locomotive.

At the start of your turn there was the briefest of conversations with the depot traincrew supervisor who would give you an engine number and the first job to be carried out. When you arrived at the next manned location you would be given details of the next train to be worked and so on. From August 1975 when Shirebrook had cut over to the Total Operations Processing System (TOPS) the first port of call became the TOPS supervisor's office to collect your full diagram. Any subsequent changes would be communicated by him. Contact with the Divisional control organisation was minimal: the number of occasions when they intervened could be numbered on the fingers of one hand over a ten-year career. Local managers were experienced and knowledgeable and tended to 'stay put'. There was no constant churn of new appointments. Occasionally a new pair of eyes at Division (possibly a new management trainee?) would come up with a plan to change a method of working but would usually be met by a firm LDC response.

A case in point was the Northfleet working from Welbeck Colliery which was formed of 43 mineral wagons and a pair of Class 37s. This had a booked terminal time of 3hr 57min in theory (but maybe two hours on a good day) which concluded with a propelling movement on to the running line after a run-round at the branch end. The management proposal wanted the loaded train to be drawn out on to the running line and left there while the engines proceeded to Clipstone Junction before returning to re-attach. The LDC saw this as potentially unworkable but agreed to its formal introduction. The management side pondered this unequivocal response and decided to leave things well alone.

On the trade union side of affairs, the only interface with the National Union of Railwaymen HQ was at the time of national strikes. Local issues rarely needed escalating and consequently District Organisers did not come to branch meetings.

Taking stock

As the 1970s ended, BR was carrying more coal than at the start of the decade and earning more revenue. By 1982/83 in the North Nottinghamshire coalfield 83% of its output was being sent to power stations. The inexorable increase in Class 6 fully-fitted block train operation to move this traffic made it clear that the requirement for a guard was diminishing (as reflected by piecemeal but ongoing reductions in the establishment in the recession-hit early 1980s) and the imminent likelihood of a transfer to a leading railman terminal-based post became likelier. For our man the railway had not been a vocation as such but being a guard was a job he liked and believed he was good at.

Once you had read your notices after signing-on and left the depot knowing what your job you were set for, the rest of your day. You knew what was expected of you and it was up to you to deliver and most importantly you were your own boss. There were awkward and tiresome places to work but the challenge was always accepted. Although shunting and preparing trains in the pouring rain with water rolling down the back of your neck and trousers soaked through was not pleasant, it didn't happen every day. Also becoming a member of the Local Departmental Committee, and later its Branch Chairman, had opened up a view of the bigger picture particularly in respect of the railway's customers, their needs and the importance of them being looked after. It was time to move on and so it was in 1983 that this guard put his foot on the first rung of the management ladder when promoted to be an Area Traffic Supervisor at Shirebrook depot.

Acknowledgements

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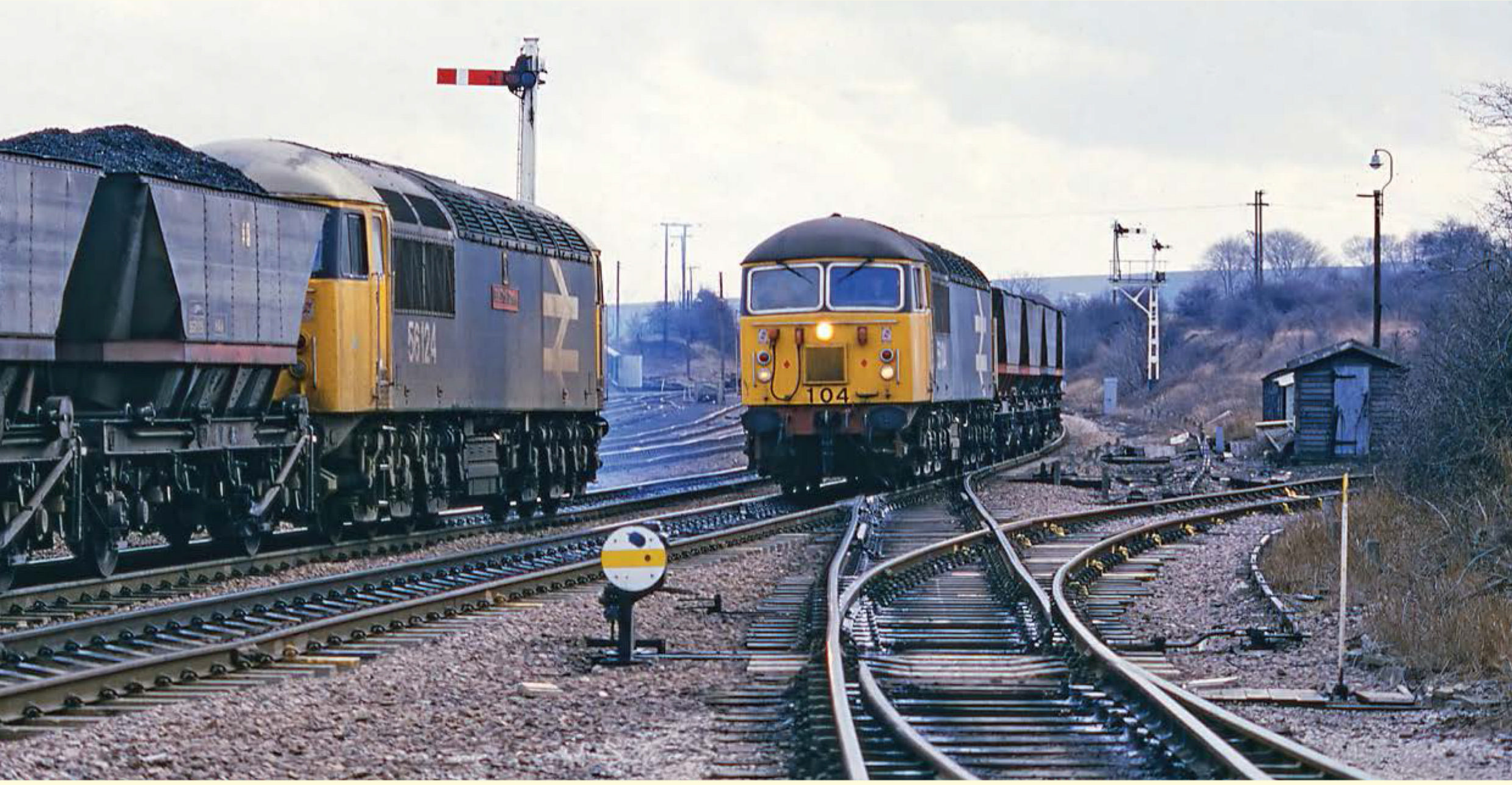
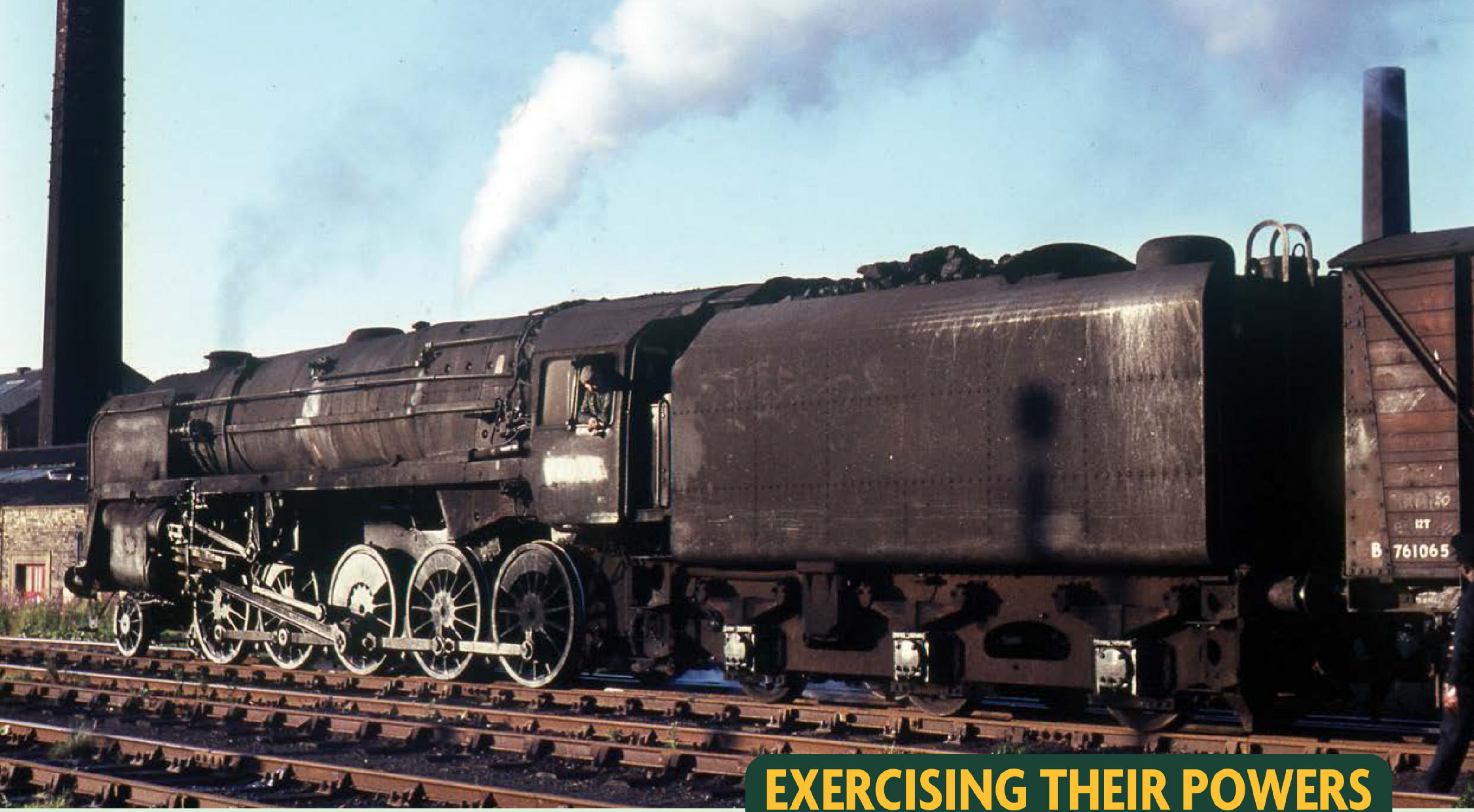


Shirebrook West Sidings in March 1986. No.56 104, with a loaded MGR set destined for Ratcliffe power station, stands waiting for the signal to clear on the up main. Meanwhile No.56 124, which has just propelled a loaded set out of Shirebrook Colliery bunker on to the down main, is getting under way heading for a Trent Valley power station. Shirebrook had benefited from investment in the mid-1970s which had enabled it to access a new seam. In 1983 it was merged with nearby Pleasley Colliery and collectively produced 1.7 million tons, all of which was wound at Shirebrook. The wooden single storey building on the right is the signal box. It replaced the original Shirebrook Sidings box which was burnt to the ground in June 1971. (Chris Davis)

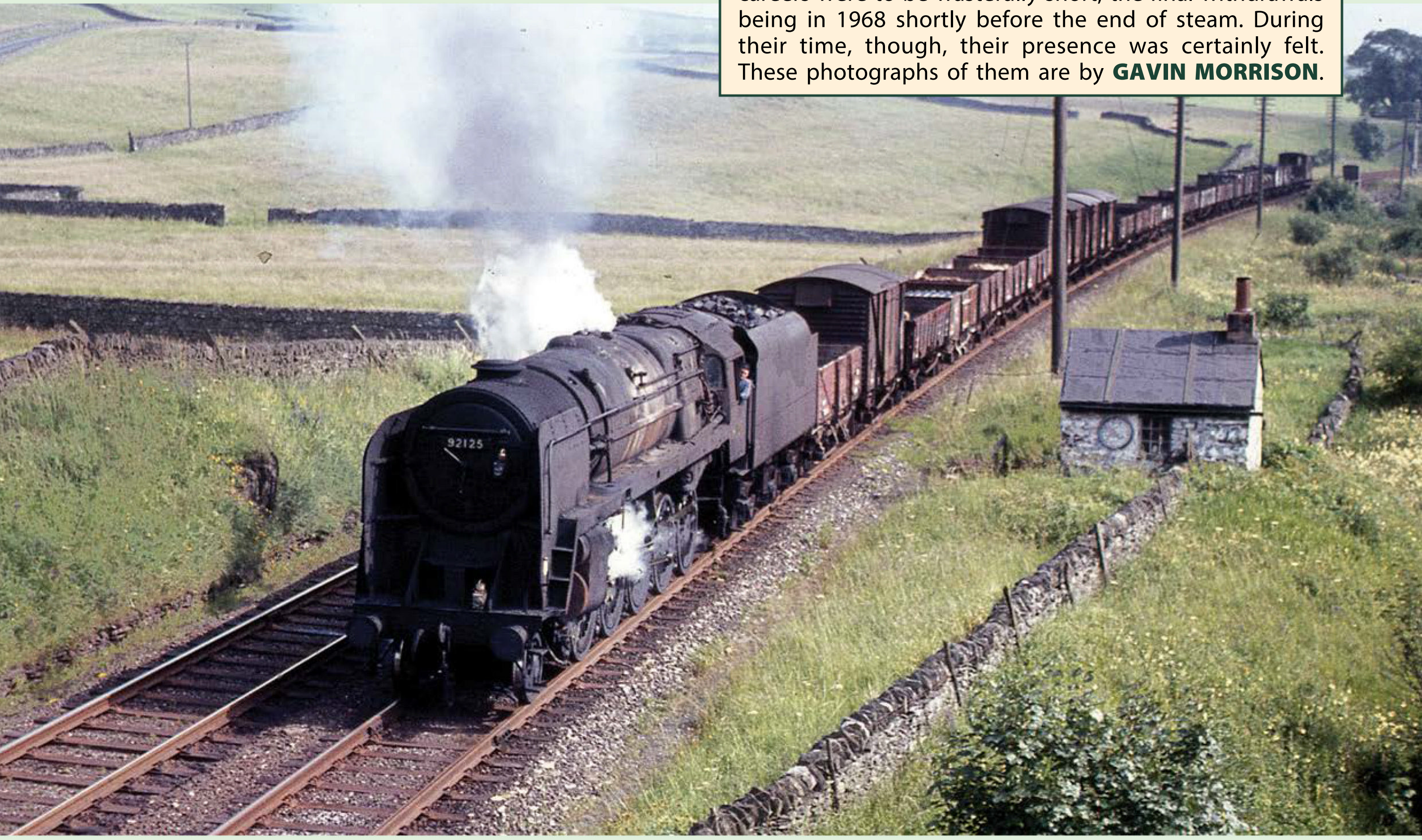


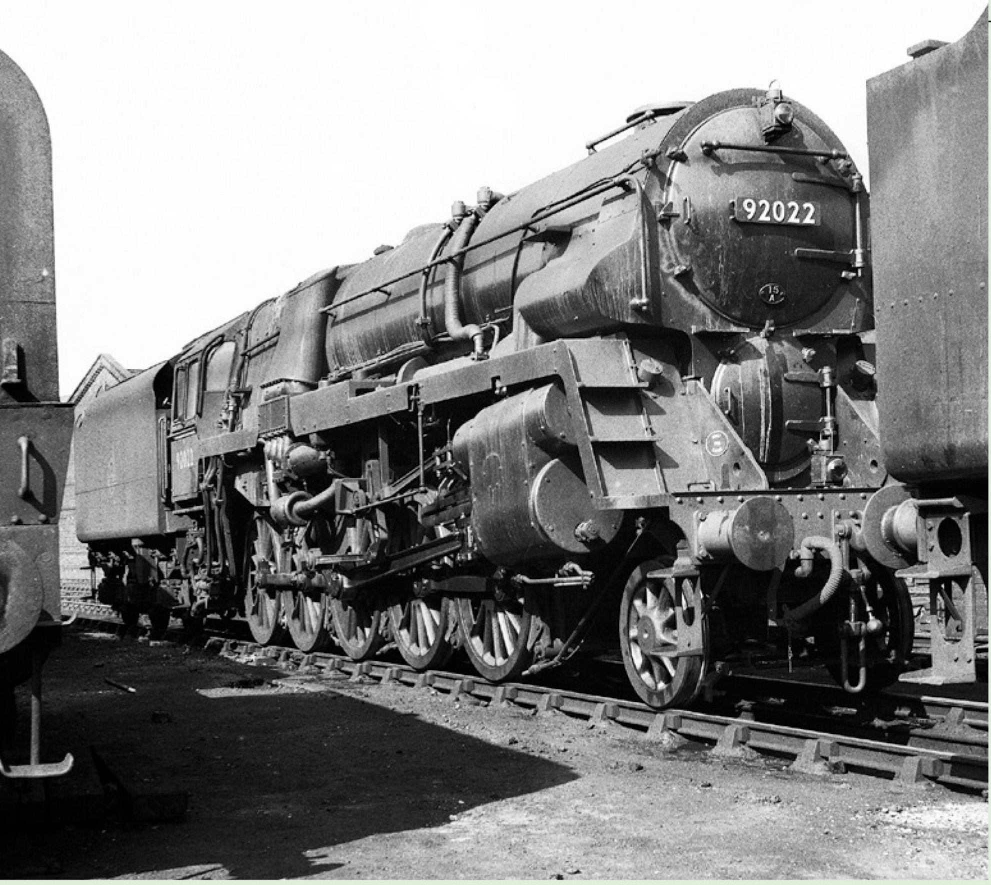
EXERCISING THEIR POWERS

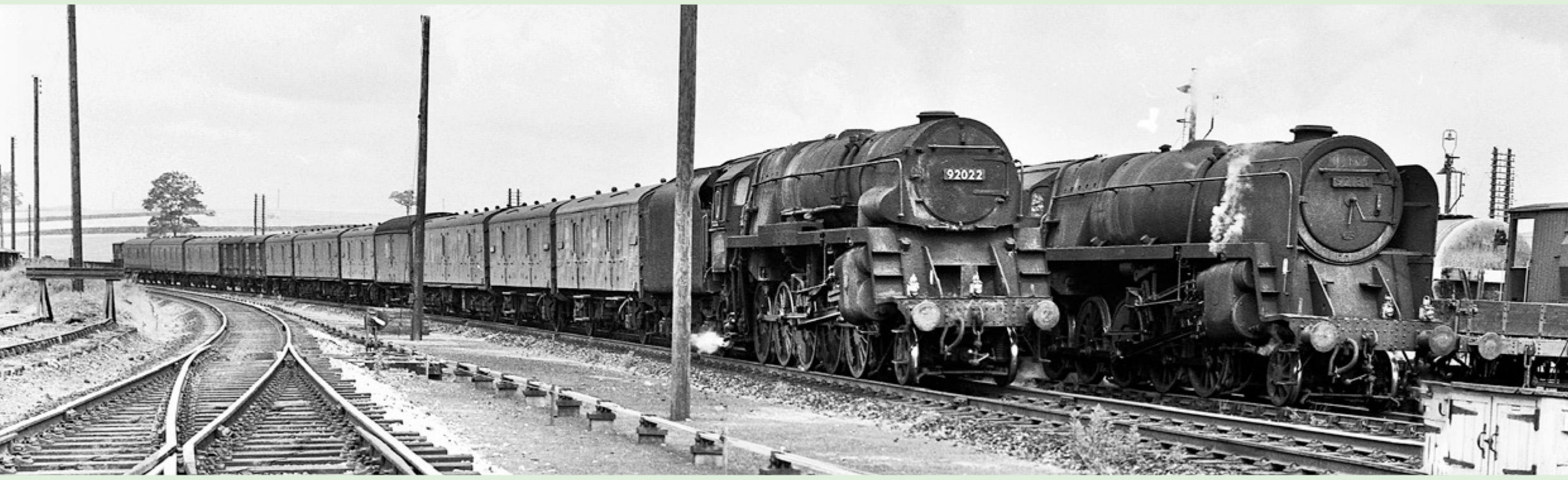
Of all the British Railways Standard classes introduced in the 1950s the Class 9F 2-10-0 was the most distinctive and many would argue the most successful. The arguments for a 2-10-0 wheel arrangement for a new heavy freight design won out against a 2-8-2 and the ten-coupled type was unlike anything adopted before for this work other than a small class of 'Austerity' engines purchased from the Ministry of Supply after the war. After the first 9F in 1954 a total of 251 had been built up to the last in 1960 but with the dash towards dieselisation their careers were to be wastefully short, the final withdrawals being in 1968 shortly before the end of steam. During their time, though, their presence was certainly felt. These photographs of them are by **GAVIN MORRISON**.

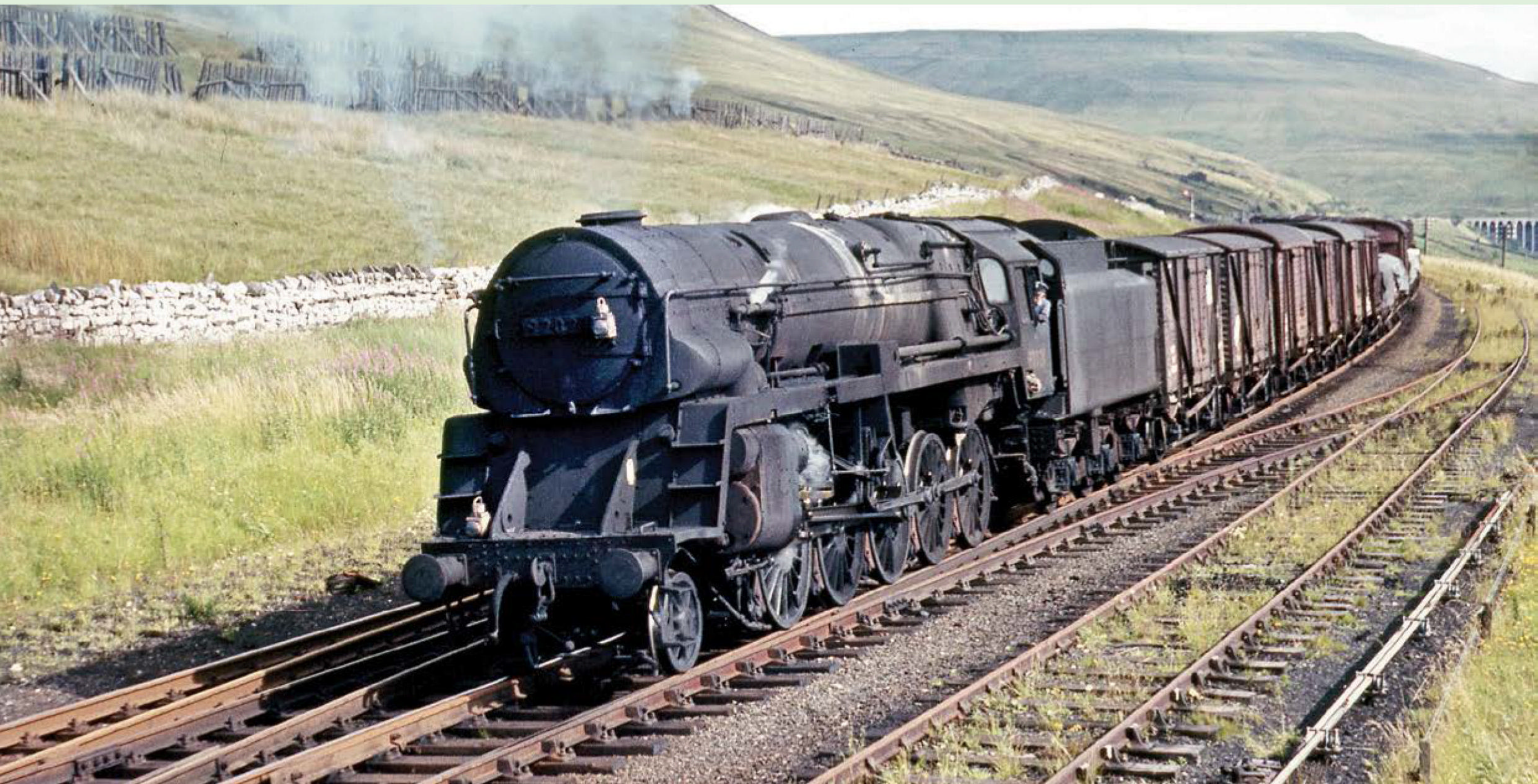
ABOVE: **No.92093 is waiting to leave Bradford's Valley Road goods depot with the 19.40 freight to Carlisle on 19th July 1967. The late evening sun gives the work-sullied locomotive a meaningful look with a touch of glint on the 5ft driving wheels. It was withdrawn from Carlisle Kingmoor shed two months later.**

BELOW: **The gradients of the Settle–Carlisle route gave the 9Fs the sort of challenge they could get stuck into and here is No.92125 on the 'long drag' approaching Helwith Bridge with the 13.30 Leeds Hunslet–Carlisle freight on 15th July 1967. No.92125 was based at Kingmoor and lasted until closure of the depot at the end of the year.**





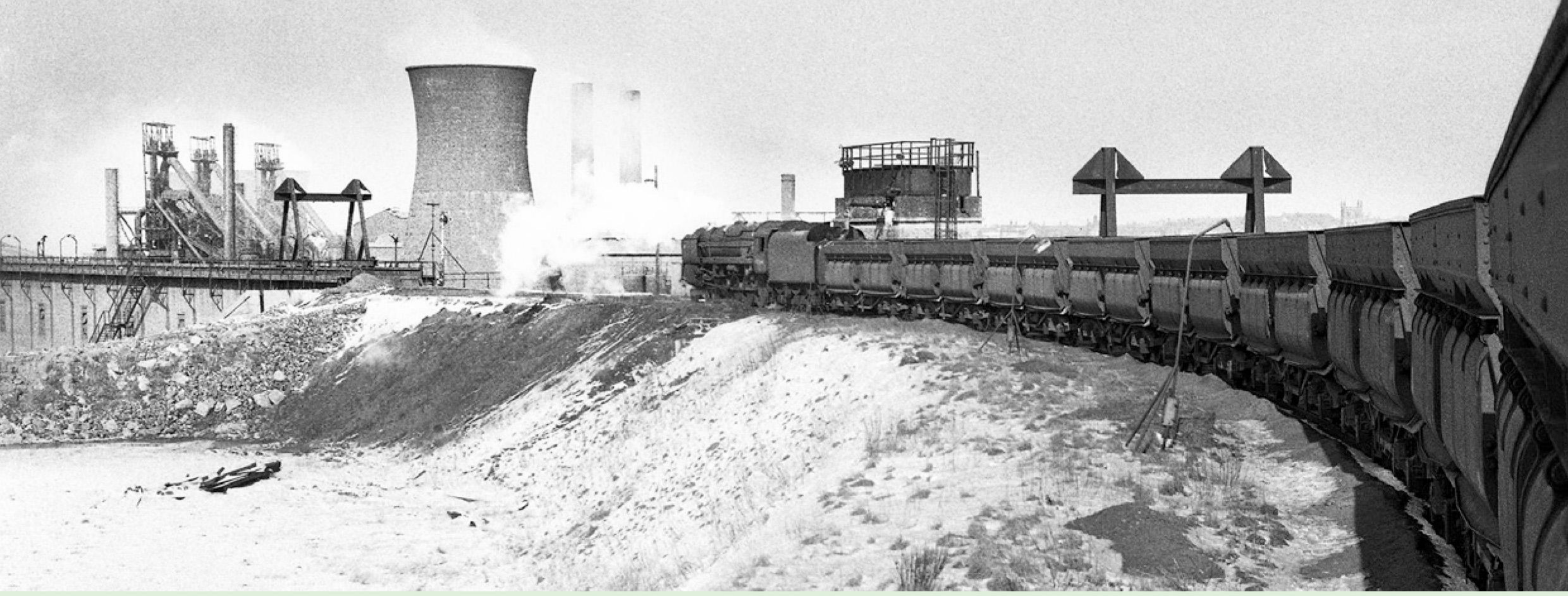


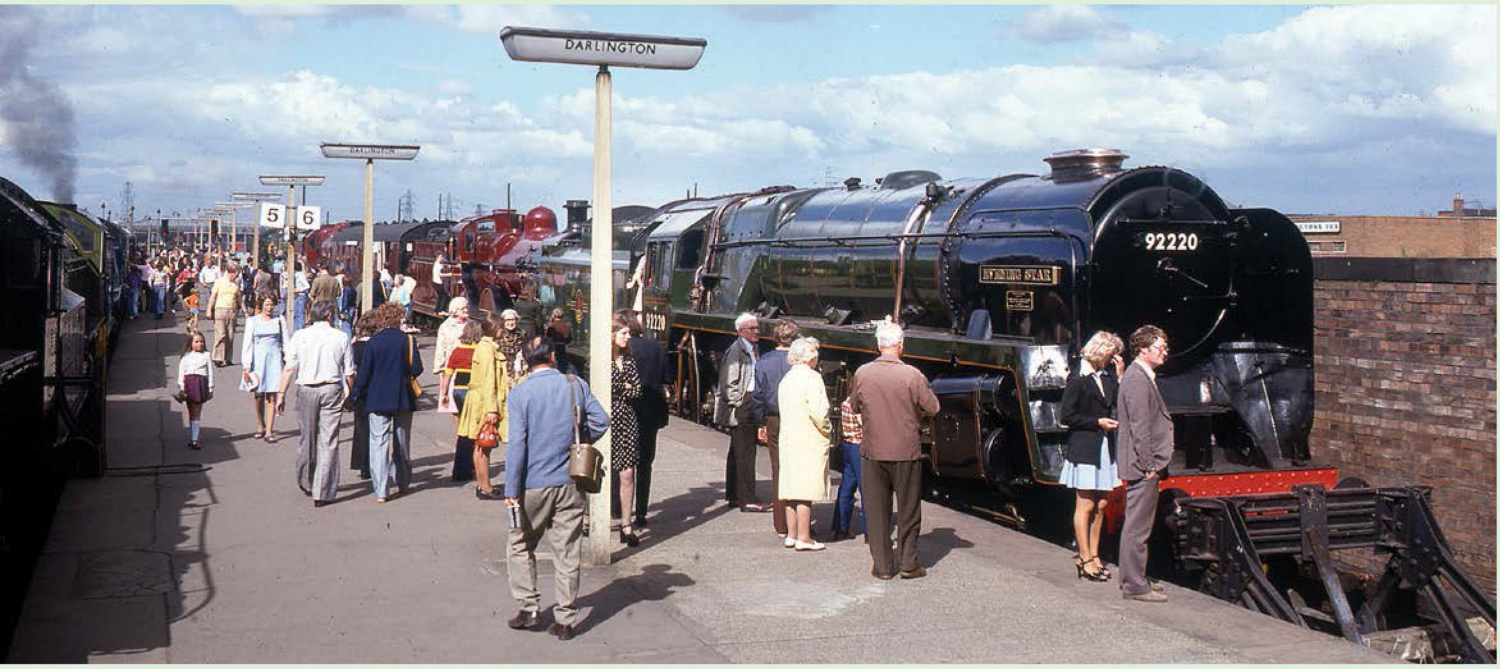


TOP: **A decision was taken to equip ten 9Fs with Franco-Crosti boilers, a system whereby the hot gases exhausted to waste from the chimney would instead be passed through a secondary boiler to pre-heat water before it was injected into the boiler proper, the basic idea being to reduce coal consumption. The pre-heater was below the boiler and the exhaust on the right-hand side of it. This arrangement can be seen on No.92022 at Wellingborough shed on 5th August 1955; the access door to the pre-heater is under the main smokebox door.**

MIDDLE: **The Crostis were not the success hoped for, while the exhaust was inclined to engulf the cab from the fireman's side – which was obviously disliked by the crews! All were converted to 'conventional' operation between 1959 and 1962. Both types were seen at Hellifield on 4th July 1964 when ex-Crosti No.92022 turned up unexpectedly on an up van train and passed No.92130 which had been looped to let it on its way.**

BOTTOM: **Ex-Crosti engine No.92021 leads the 12.55 Hunslet–Carlisle freight towards Dent station on 5th August 1967. The rebuilt engines retained their slightly odd, strangely haughty, appearance to the end.**

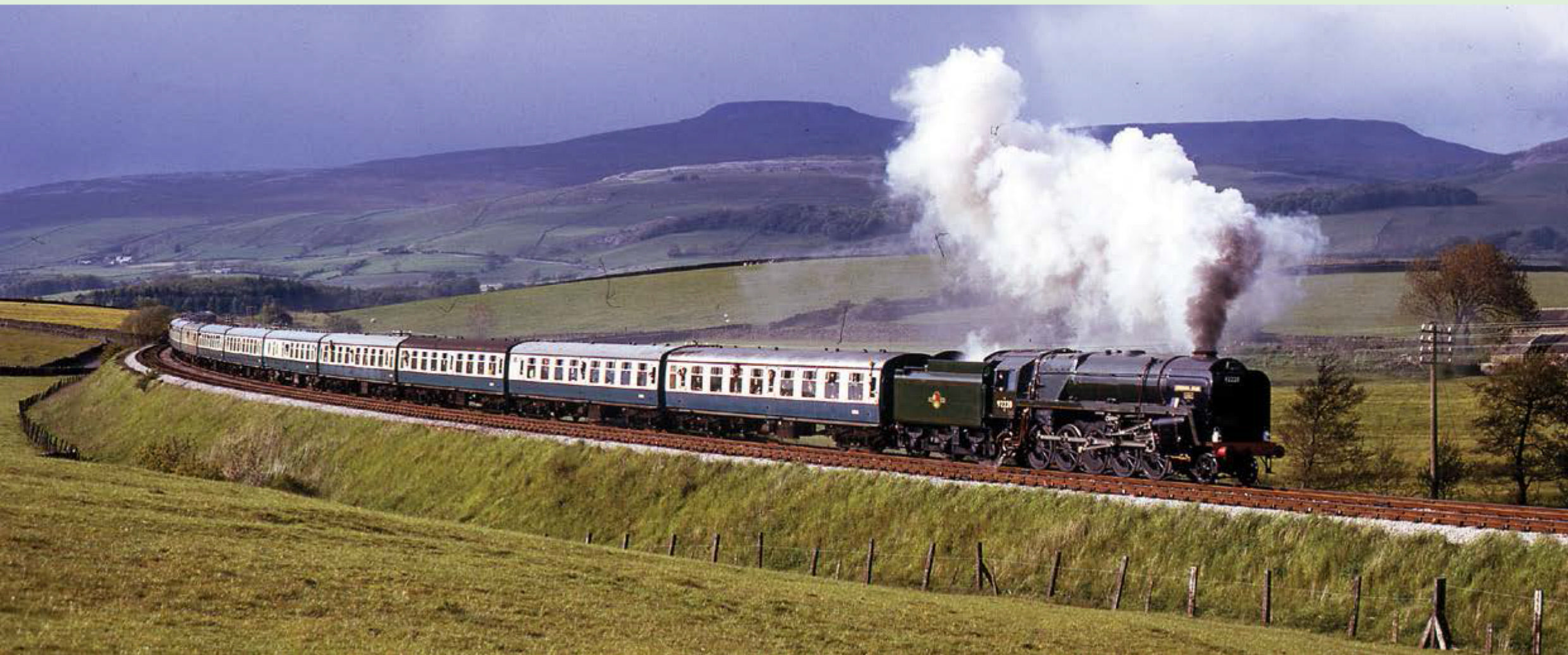


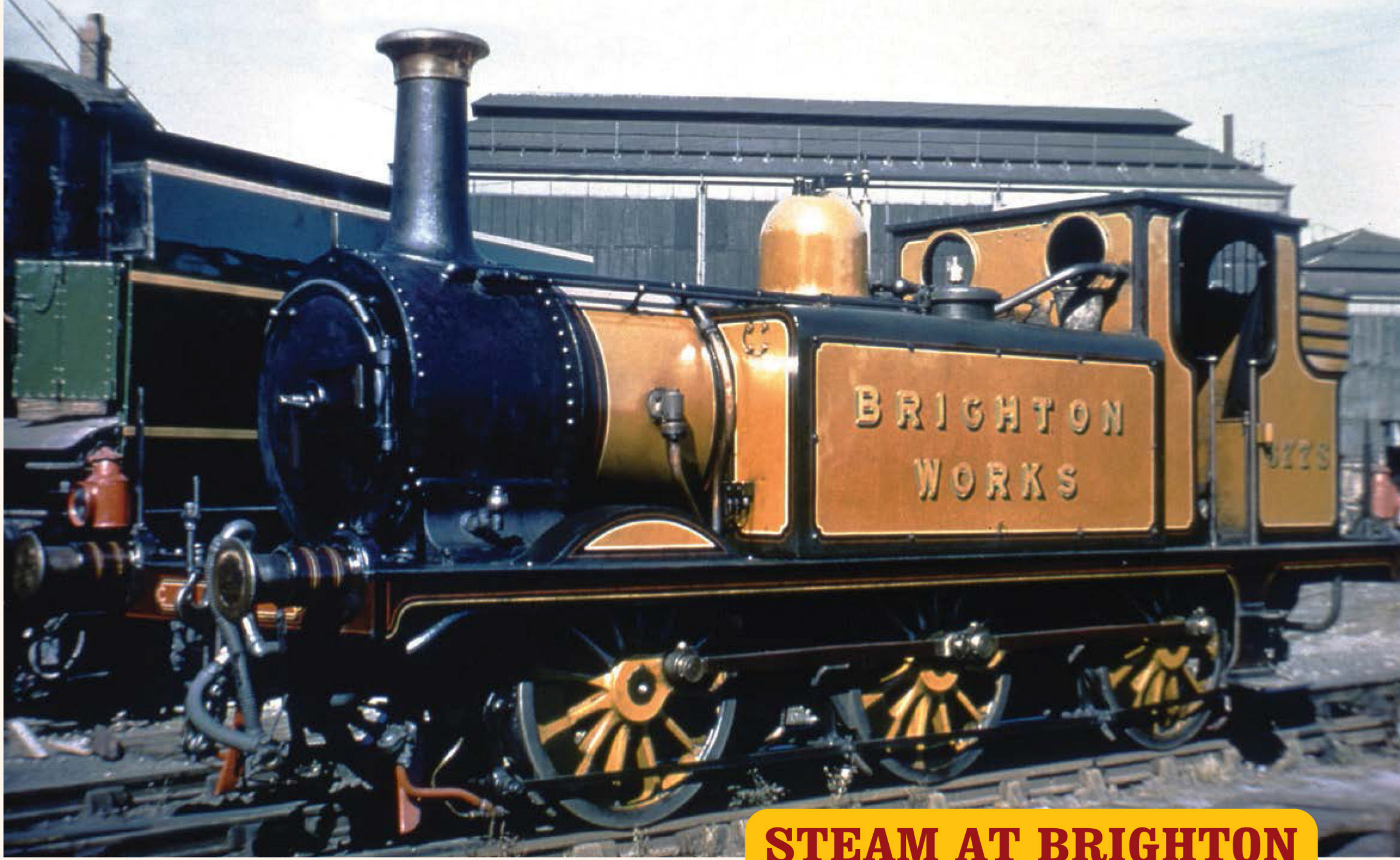


TOP: **Ten 9Fs based at Tyne Dock were provided with Westinghouse air pumps to work the hopper doors on new 56 tons' capacity wagons for iron ore traffic to the Consett steelworks. No.92066 is approaching Consett with a loaded train from Tyne Dock on 18th March 1964.**

MIDDLE: **In March 1960 No.92220 became the final steam locomotive completed by British Railways and was appropriately named *Evening Star*. It was from the start allotted a place in the National Collection but there was even a period of uncertainty over that before it reached the National Railway Museum in 1975. On 21st August that year it was on display with other locomotives at Darlington station as part of the Stockton & Darlington 150 celebrations, next to another National Collection exhibit Midland Railway Compound No.1000.**

BOTTOM: **No.92220 takes a special returning from Carnforth to Keighley past Kettlebeck in the evening light of 31st May 1975. Unfortunately concerns over the flangeless centre driving wheels (discernible in the opening photograph) in relation to raised check rails on modern tracks now preclude 9Fs from the main lines but fortunately there are plenty preserved to run on the heritage railways.**



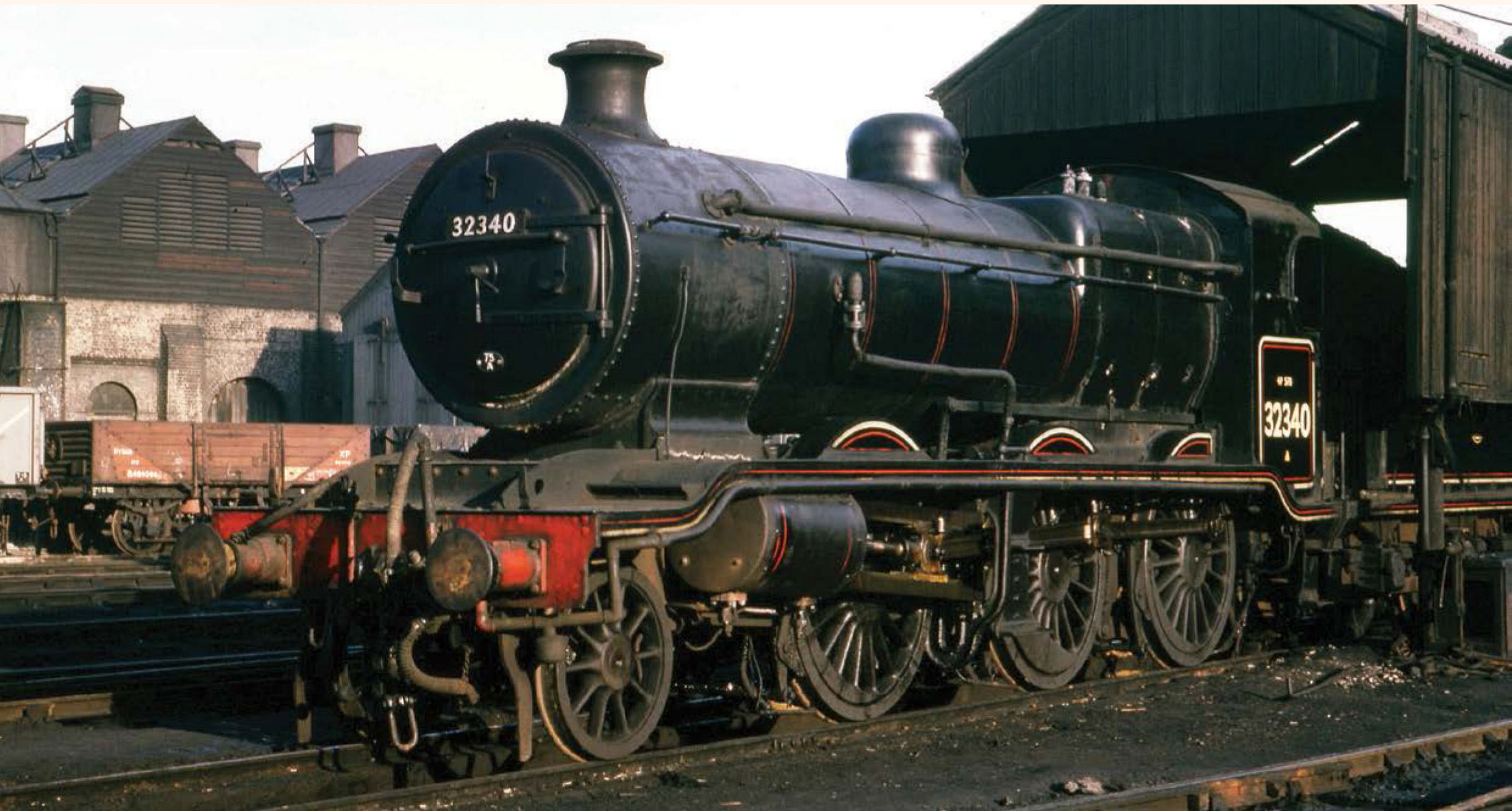


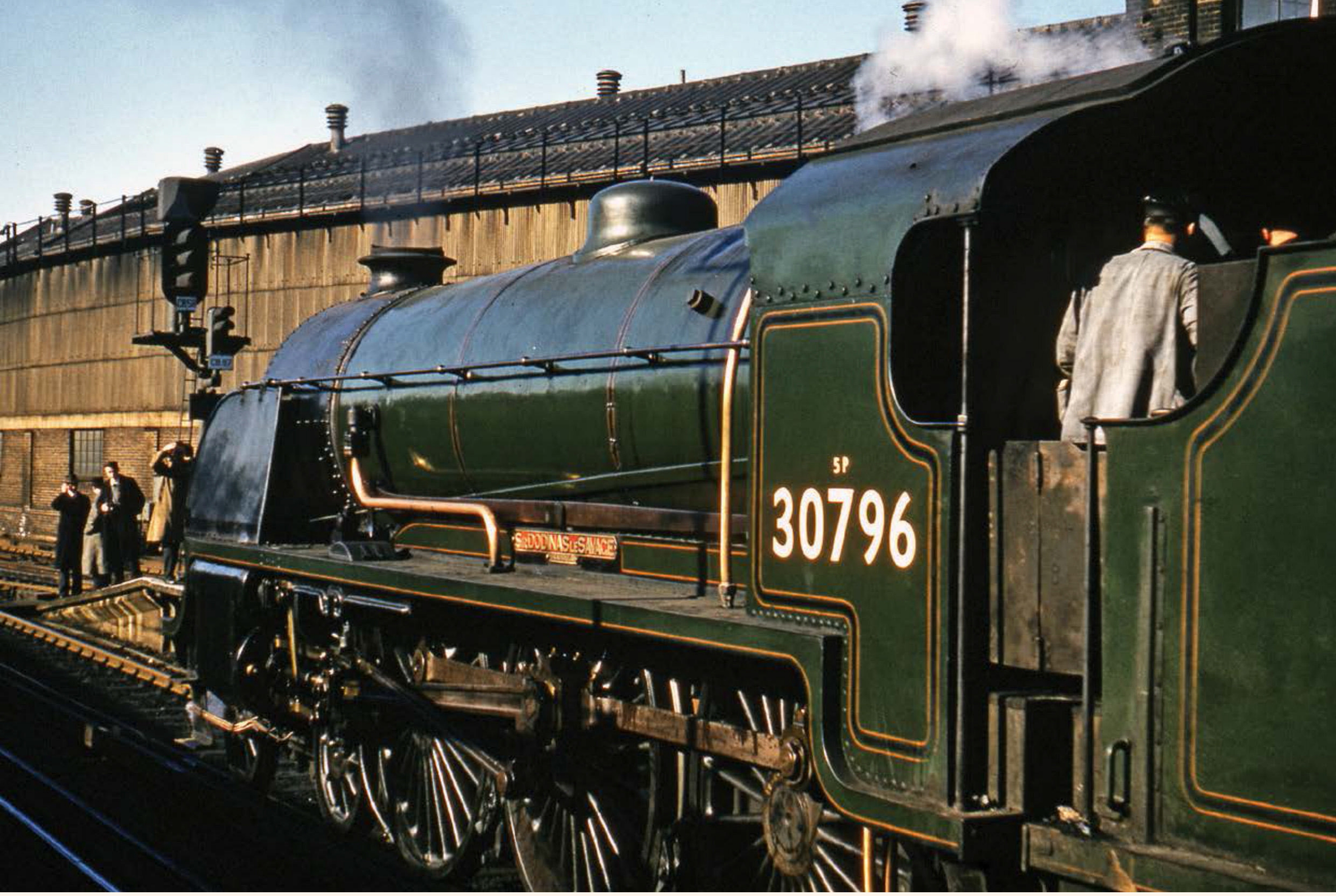
ABOVE: **The LBSCR's A1/A1X 0-6-0Ts, known as 'Terriers', were an institution going back to 1872. Fifty were built up to 1880 but after withdrawals and sales to other users fifteen survived into British Railways ownership, the last not being withdrawn until November 1963. In 1947 No.2635 (originally No.35 *Morden* of 1878) was repainted by the SR in Stroudley's LBSCR 'yellow' livery for its duties as Brighton Works pilot. With the service stock number 377S and a copper cap to its chimney, it is seen next to a new tender for a malachite green Pacific. The 'Terrier' was returned to general stock as No.32635 in 1959 but kept its Stroudley colours until the end in 1963.** (J. Jarvis/Colour-Rail SR17)

BELOW: **The LBSCR's K Class 2-6-0 goods engines were introduced in 1913, ten in the first order and seven more after the war. No.32340 was photographed at Brighton shed, where it was based, on 31st March 1962. All the Ks were scrapped at the end of the year.**
(Trevor Owen/Colour-Rail.com 392553)

STEAM AT BRIGHTON

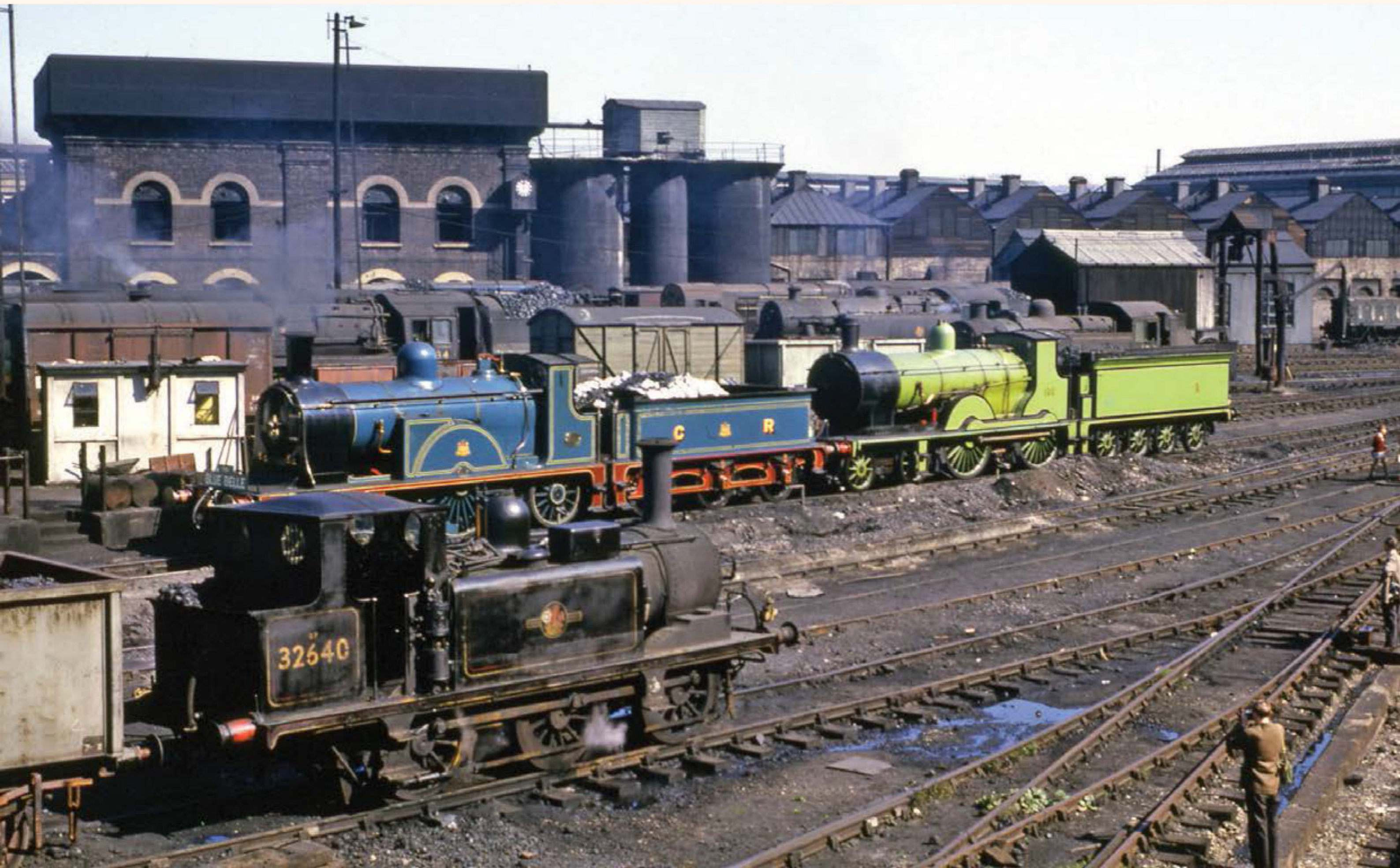
As well as being one of England's foremost seaside resorts, Brighton also became quite a railway centre. The London, Brighton & South Coast Railway's main line arrived from the capital, with other routes heading east towards Eastbourne and Hastings, west towards Worthing and Portsmouth, all connecting with a network of secondary lines across Sussex. More exceptionally, a locomotive works was established there as early as 1840, lasting into the British Railways Standard classes era before being closed in 1962. Electrification came with the Southern Railway in 1932 but steam activity continued, with the locomotive shed remaining in use until 1964.





ABOVE: **A Southern 'King Arthur' N15 4-6-0 at Brighton. No.30796 *Sir Dodinas le Savage* awaits departure on 13th April 1958 at the head of a Railway Correspondence & Travel Society special returning to London Victoria.** (E. V. Fry/Colour-Rail.com 325445)

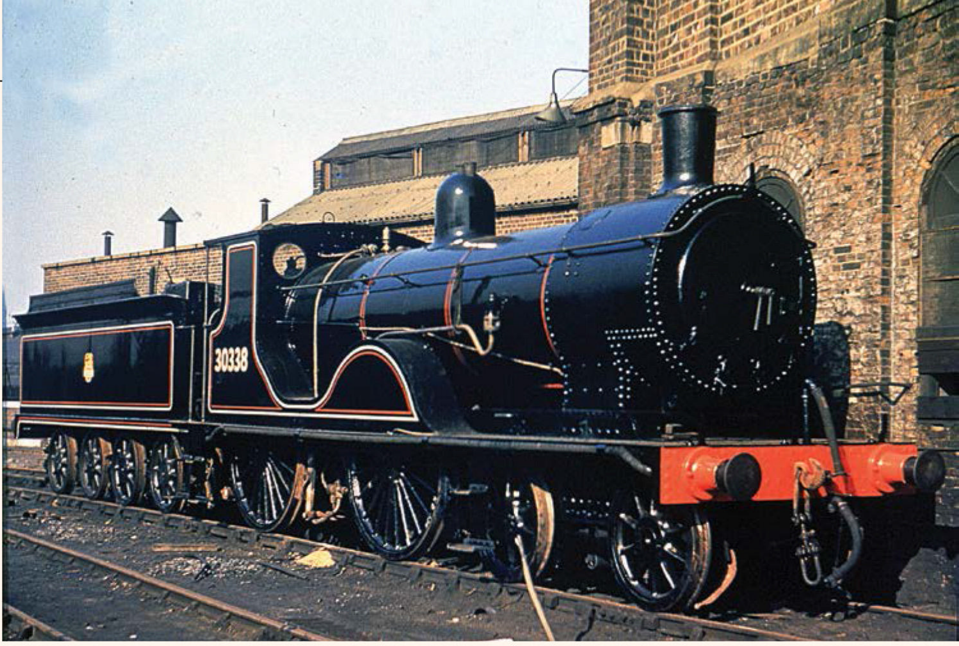
BELOW: **A very special occasion at Brighton shed on 5th September 1963 when a railtour organised by the Bluebell Railway Preservation Society saw the restored LSWR T9 4-4-0 No.120 and Caledonian Railway 4-2-2 No.123 make their way down the main line from London Victoria to Haywards Heath. The pair then adjourned to Brighton for turning and servicing. Note that No.123, very far from home, has a supply of whitewashed coal in its tender! 'Terrier' tank No.32640, destined to be withdrawn that month, adds a touch of local vintage.** (G. Parry Collection/Colour-Rail No.313446)

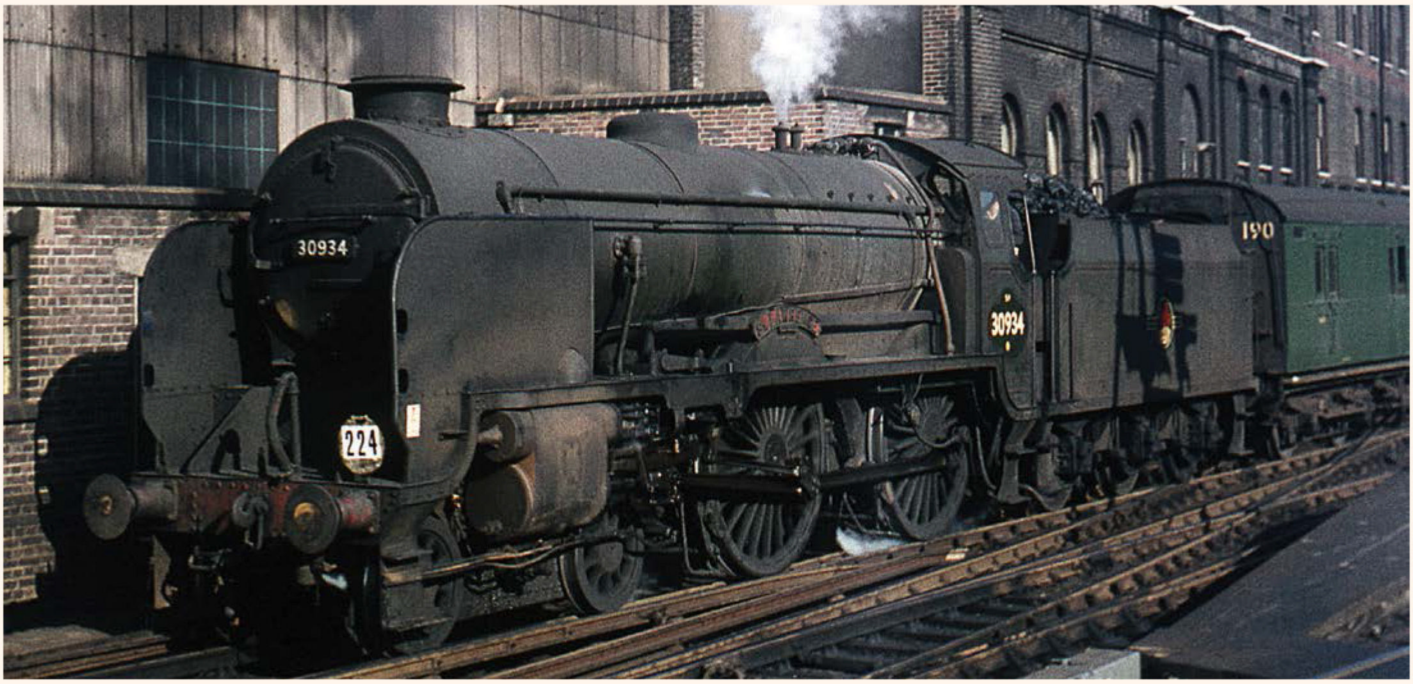


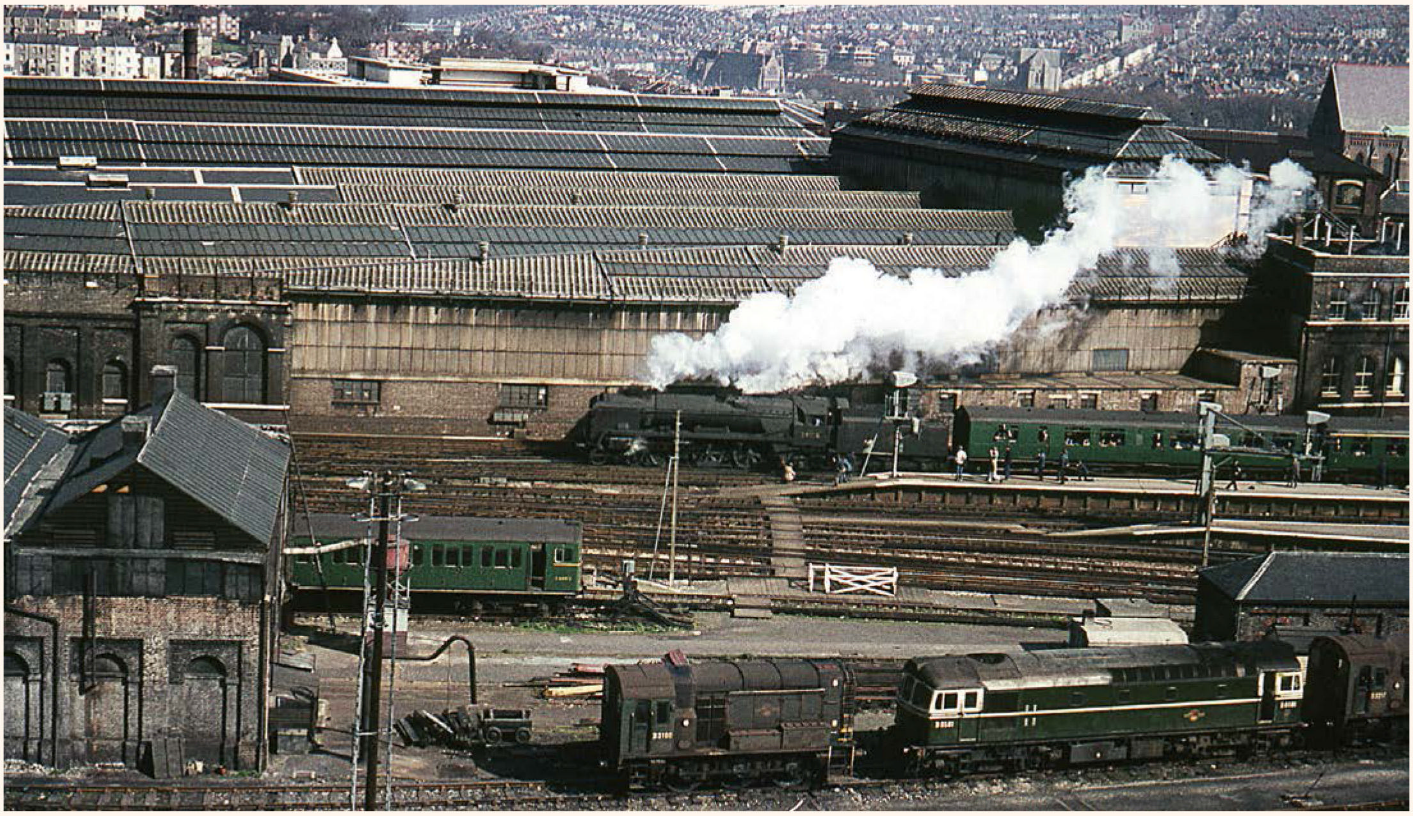
TOP: **A London & South Western Railway visitor to Brighton on 15th March 1953 was T9 4-4-0 No.30338, based at Guildford and only recently out-shopped by the look of it.** (Trevor Owen/Colour-Rail.com 392548)

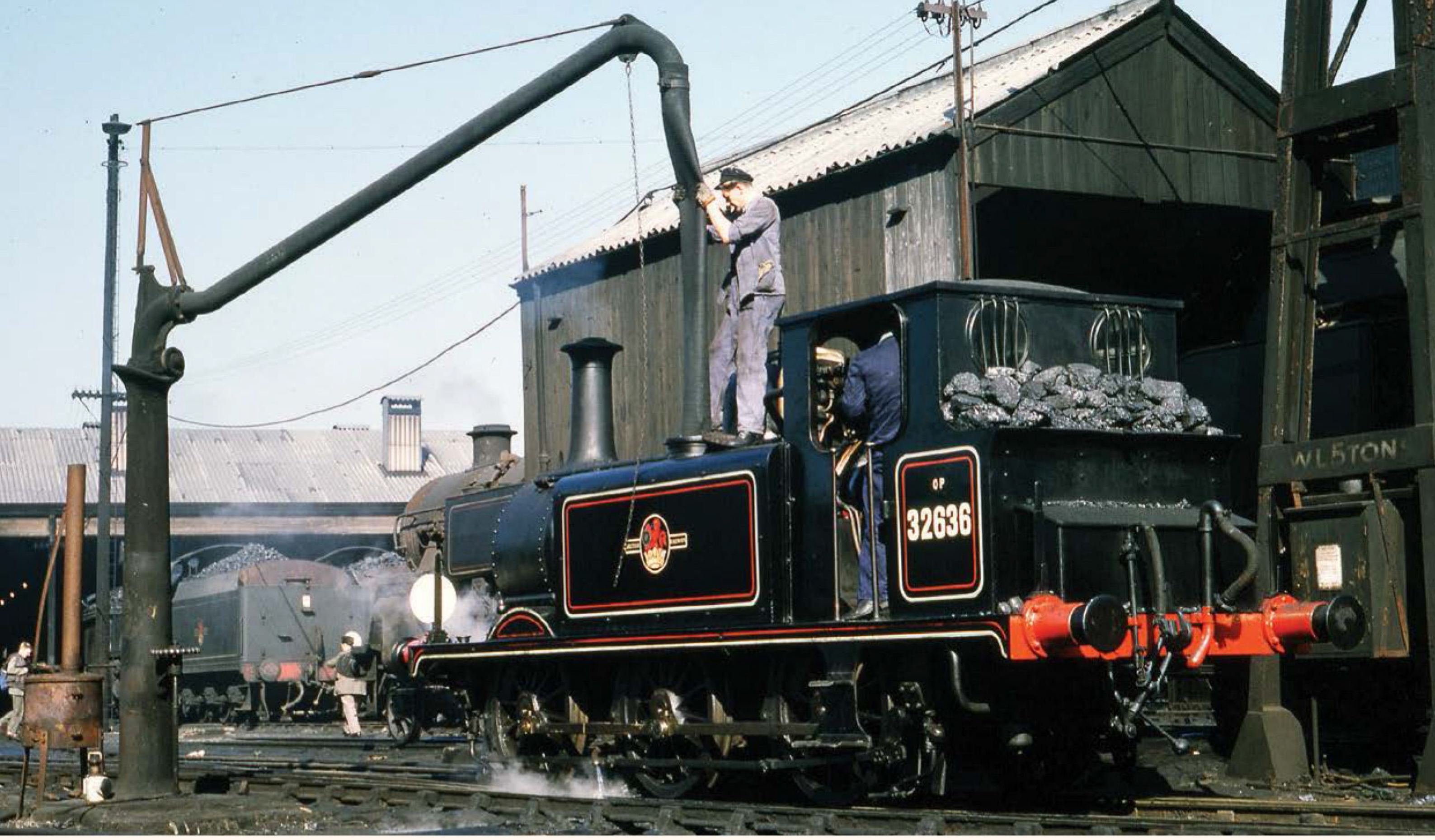
MIDDLE: **SR 'Schools' 4-4-0 No.30934 *St. Lawrence* departs for Tonbridge on 6th August 1961. The locomotive is looking neglected by now and all the class had been taken out of service by the end of the following year.** (Colour-Rail.com 342374)

BOTTOM: **SR 'West Country' Pacific No.34108 *Wincanton* sets out on 19th March 1967, returning an excursion to London. The locomotive works in the background had completed their last locomotive in 1957 and after a period of alternative useage following closure the buildings were demolished in 1969 to make way for car parking.** (Colour-Rail.com 342910)



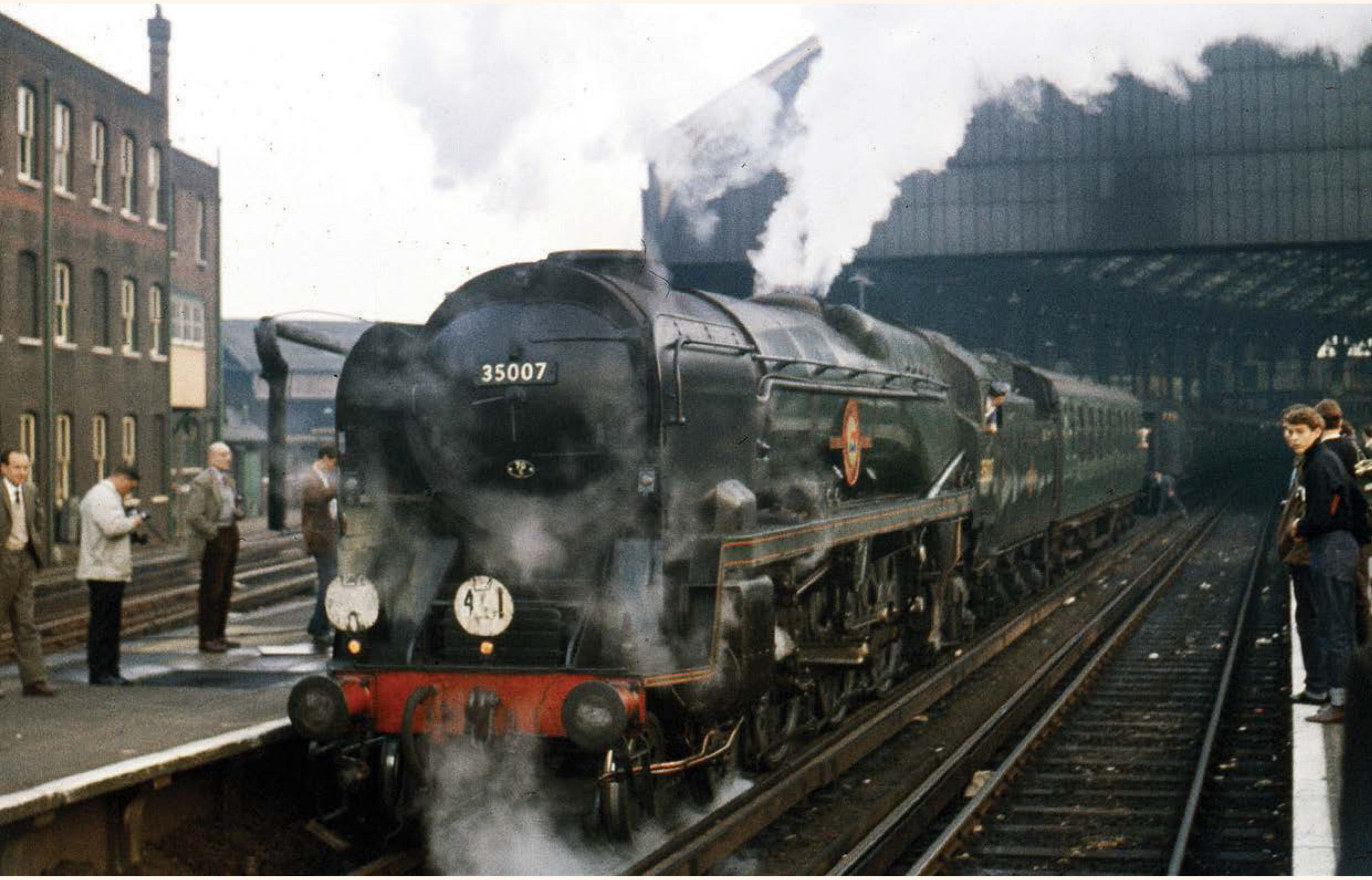






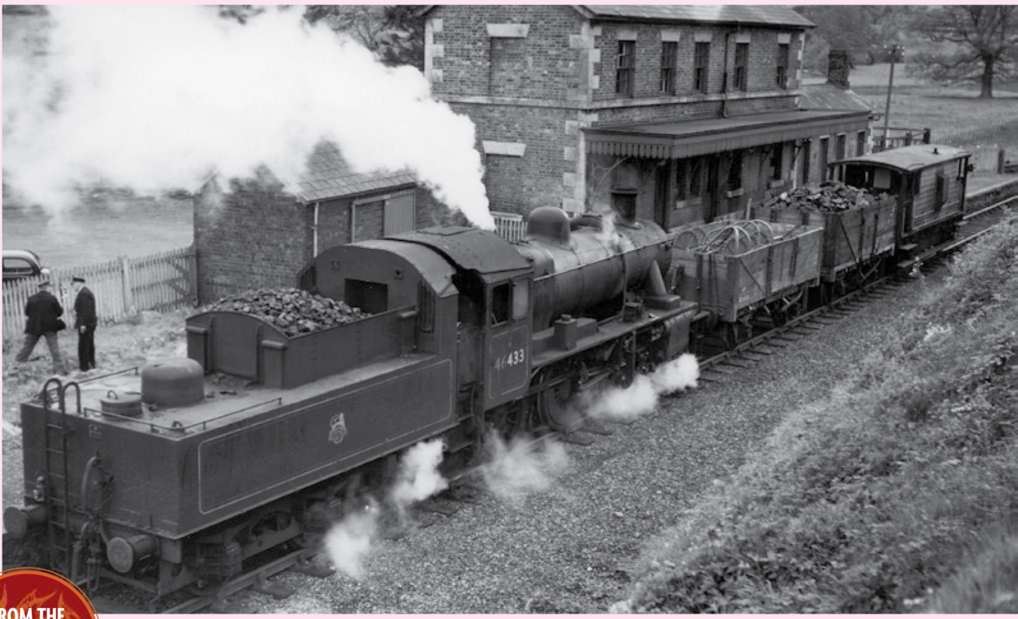
ABOVE: **The 'Brighton' lives on... 'Terrier' No.32636 (dating from 90 years previously) has been polished up for railtour duty on 7th October 1962 and is being rather overawed by the lengthy water crane at the shed while having its tanks topped up – at just 500 gallons that wouldn't take long. With an E6 0-6-2T it worked an RCTS special from Brighton to Newhaven and Seaford – and back.** (Trevor Owen/Colour-Rail.com 392555)

BELOW: **The SR 'Merchant Navy' Class 4-6-2s were not generally to be found on the Central Section lines but on 18th October 1964 No.35007 *Aberdeen Commonwealth* made an appearance at Brighton. Here it is before beginning its return journey to Victoria which it accomplished in 56 minutes – the electrics were allowed 60!** (Colour-Rail.com 341123)



NORTH WALES BYWAYS

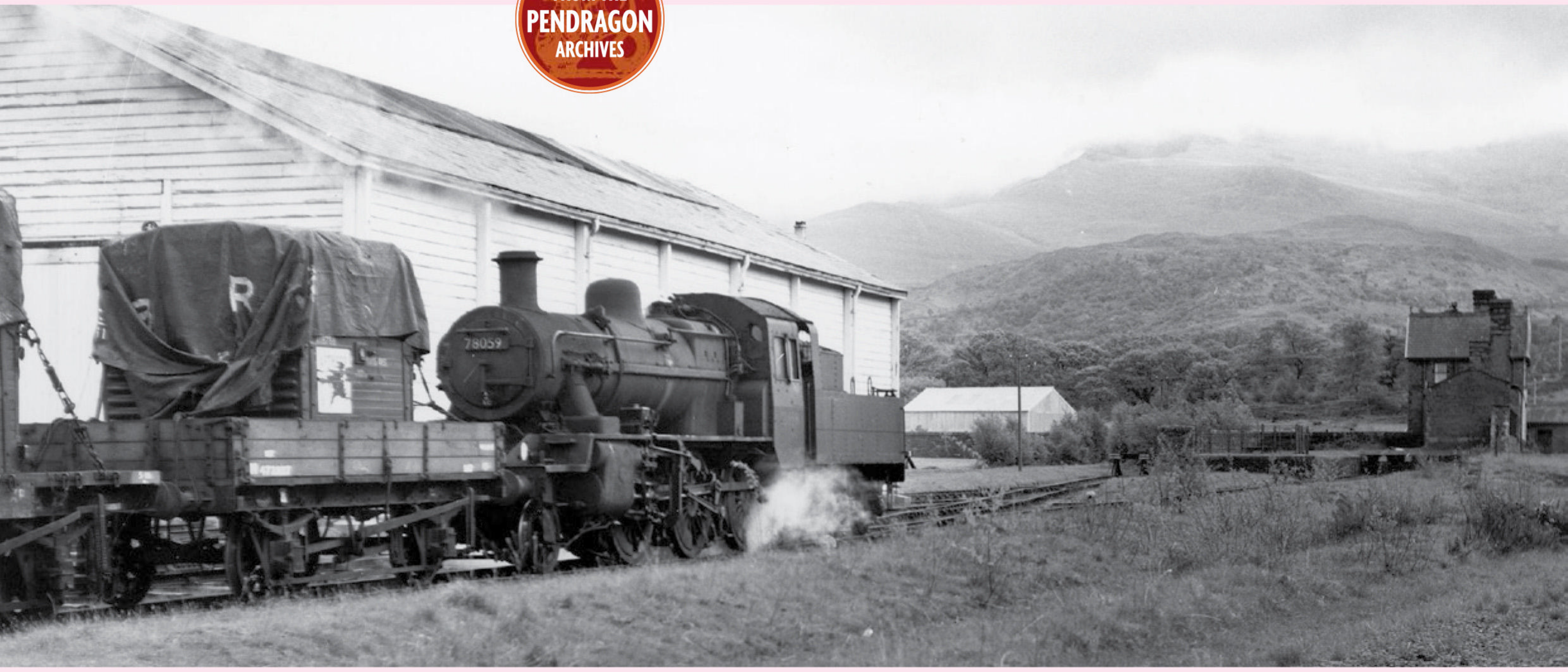
Visited by **JOHN SPENCER GILKS**

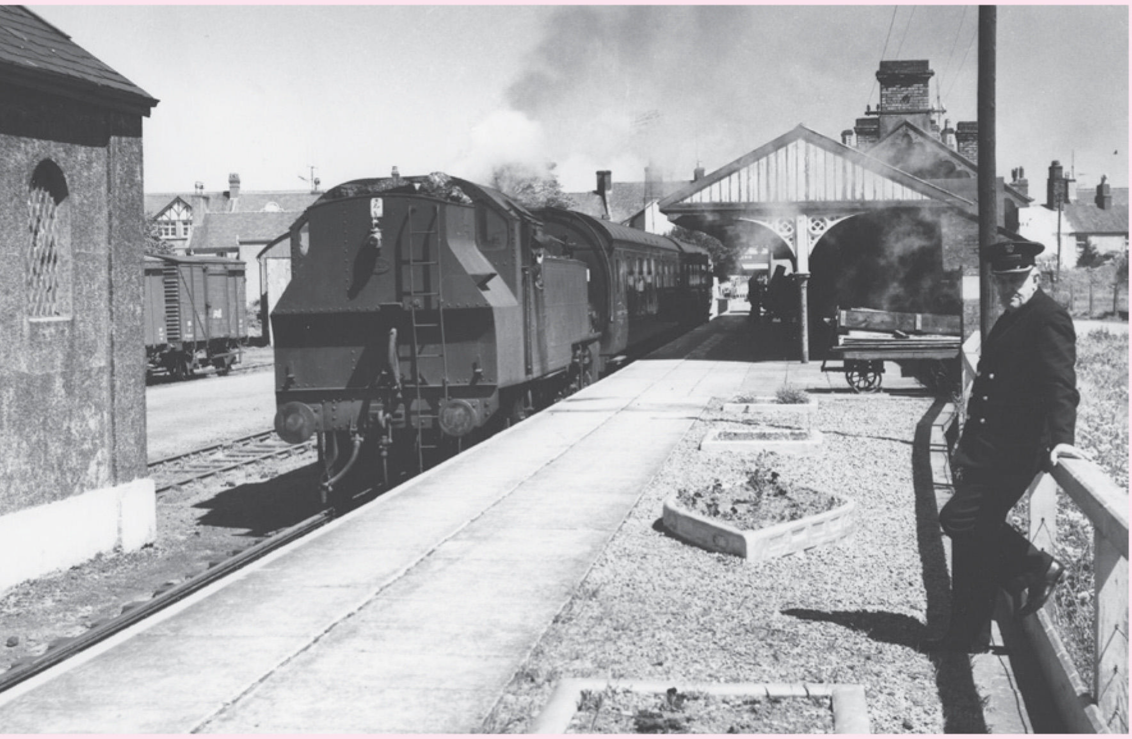


Nantclwyd (RIGHT)

In Denbighshire, on the London & North Western branch from Rhyl to Corwen, LMS Class 2 2-6-0 No.46433 wastes steam and time at Nantclwyd with a local goods consisting of, in the photographer's words, "coal and machinery". This branch, linking the North Wales main line with the GWR Ruabon–Barmouth Junction route, withered away to passenger services in stages: Corwen–Ruthin in 1953, Denbigh–Rhyl in 1955, Ruthin–Denbigh (and Chester) in 1962.

FROM THE PENDRAGON ARCHIVES



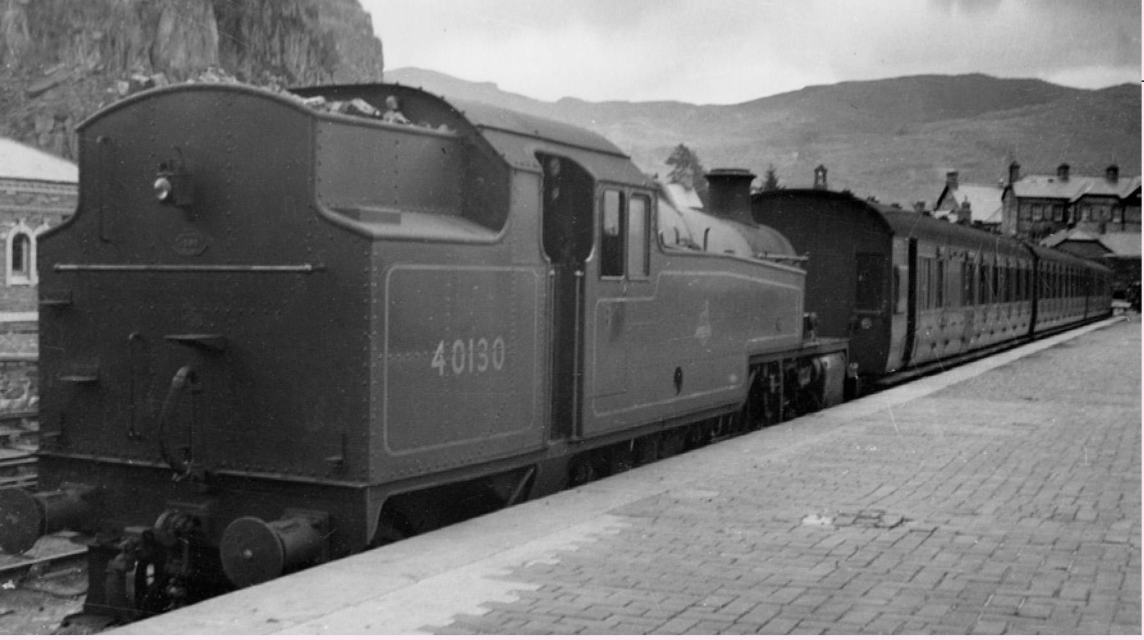


Bethesda (ABOVE)

The LNWR branch from Bangor to Bethesda opened in 1884 principally to serve the extensive Penrhyn slate quarries. The local passenger service ceased to be in December 1951 but goods traffic managed to cling on until 1963. BR Class 2 2-6-0 No.78059 has brought in some wagons, including a sheeted container, from Bangor on 21st May 1962.

Amlwch (LEFT)

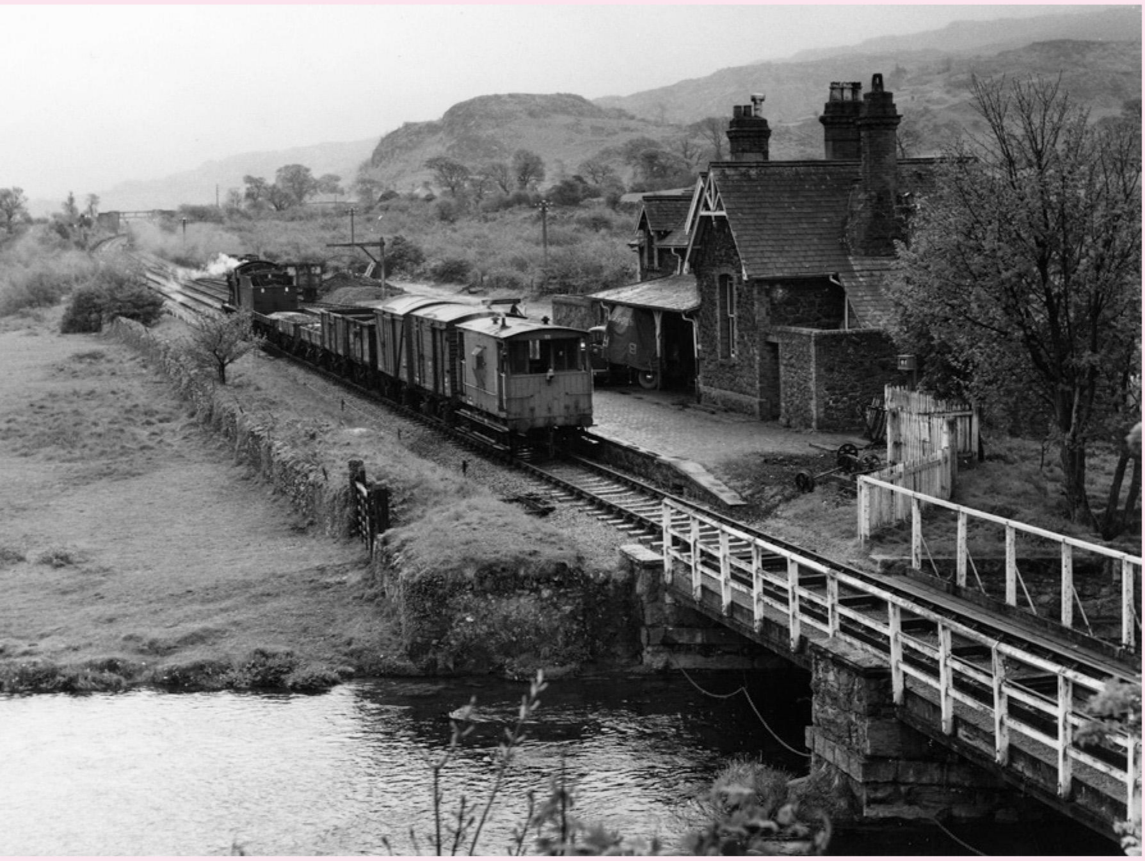
The 17¾-mile branch across Anglesey from Gaerwen, on the North Wales line, to Amlwch closed to passengers in December 1964, through chemicals traffic continued until 1993. The guard of the 2.25pm to Bangor enjoys a few moments in the spring sunshine on 24th May 1962 before LMS Class 2 2-6-2T No.41233 whisks it on its way.



Blaenau Ffestiniog

(LEFT)

LMS Class 3 2-6-2T No.40130 steadies itself at Blaenau Ffestiniog before tackling the 5.30pm run to Llandudno on 9th September 1953. This is the LNWR's 'North' station, with the one-time North Western Hotel in the background. After the Festiniog Railway had finally made it back to its ultimate destination a new joint station was opened in the town in 1983 on the site of the former 'Central' station which had been the terminus of the Great Western's branch from Bala until 1961.

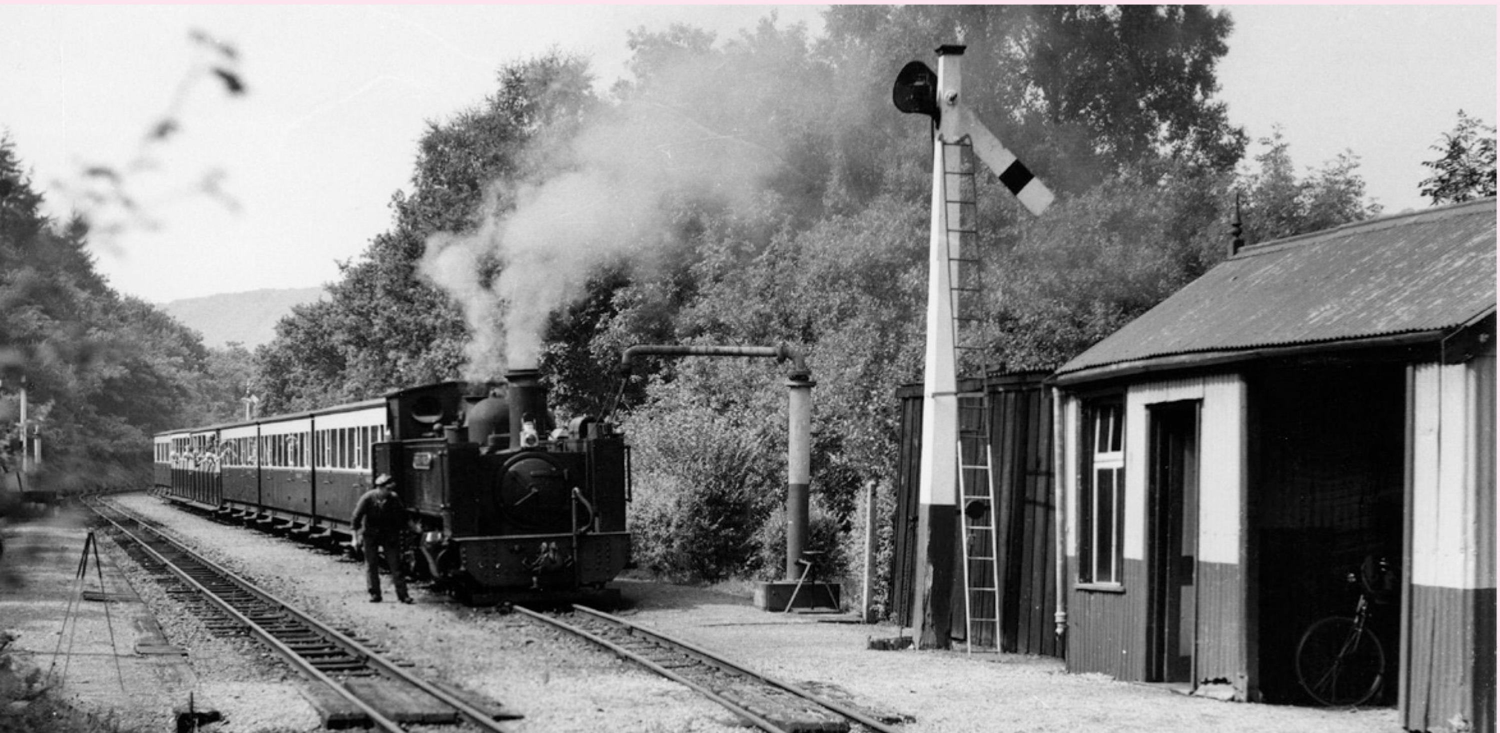


Pontrhythallt (MIDDLE)

A branch from Caernarvon (as it was spelt then) to Llanberis opened in 1869. Passenger traffic succumbed to road competition in 1930 (though tourist excursions continued) and goods similarly in 1964. 4F 0-6-0 No.44504 potters on its way with the freight from Bangor at Pontrhythallt on 21st May 1962.

Aberffrwd (BELOW)

The Vale of Rheidol Railway is perhaps more 'Mid-Wales' than 'North', but it was a remarkable presence on the national network map when advertised as 'BR's only narrow gauge line'. 2-6-2T No.9 *Prince of Wales* is taking water at Aberffrwd en route from Aberystwyth to Devil's Bridge on 21st August 1959 while the driver checks round. At this time the passing loop and signals required the station to be staffed – note the bicycle in the corrugated iron 'office'!



BERT SPENCER GRESL

A smiling Bert Spencer, wearing a light felt hat in the centre of the group in the foreground, attends the launch of the first P2 at King's Cross on 1st June 1934. This is one of many locomotive projects in which he played an important role. (Bert Spencer Collection)

To anyone interested in the history of the London & North Eastern Railway and its celebrated Chief Mechanical Engineer, Nigel Gresley, the name of Bert Spencer will be familiar. This softly spoken, modest but very talented engineer laboured in the giant shadow cast by his leader, unobtrusively working to support him in his great endeavours.

Bert Spencer was a daily presence in the CME's London offices at King's Cross for sixteen years, having spent seven years learning his trade as a draughtsman and designer with the Great Northern Railway. However, such was his understanding of engineering and his leader's way of working that he managed to merge into the background and never sought to steal the limelight from Gresley or embarrass him when his ideas went awry. He quietly went about his business suggesting improvements, translating often very sketchy proposals to ensure that any schemes reaching the Chief Draughtsman were effectively and correctly defined. He did this all with a master's touch.

In some ways he may be seen as a 'the power behind the throne', but to do so would be disingenuous and wholly misleading of the man and his motives. He was, first and foremost, someone always prepared to work for the greater good, rejecting any thoughts of personal reward beyond the desire to see a job well done. In any walk of life such people are to be valued very highly.

Yet his time with Gresley occupied less than half his working life. Although a period in which they both reached the peaks of their careers, the remaining years were hardly wasted, each filled with many noteworthy achievements. First he served Gresley's successor, Edward Thompson, and met the demands of war and recovery with equal skill and devotion. Then he ably supported the LNER's last Chief Mechanical Engineer, Arthur Peppercorn, as he grappled with the after-effects of war and the machinations of nationalisation. Finally, there came ten years of active service with the newly formed British Railways, a time in which he played an important role in its test and evaluation programmes, the development of standardised steam locomotives and the introduction of diesels. But wherever he went or whatever he did, the guiding principles were those he forged whilst working at King's Cross.

Without Gresley, Spencer might not have achieved so much, but I believe Gresley's accomplishments could have been far less without the ever-present Spencer. Difficult to prove, of course, but it would be too easy to sweep the younger man's contribution to one side by using the convenient but misleading epithet 'they were Gresley's engines'.

Unlike Gresley, Thompson and Peppercorn, Spencer did not have the benefit of a public school education. From a poor, under-privileged background he found an outlet for his undoubted intelligence through education and took full advantage of what was on offer in Doncaster. He later described his early years when he wrote:

"I was born in a typical Victorian terraced house close to Doncaster town centre. My father [Abel] was a cabinet maker and my mother [Frances] his third wife, the first two having died a few years earlier, leaving him to bring up two children by himself. In the years that followed three more children came along, with me being the last. Although we did not have much money my childhood was a happy one and being the youngest meant that I was probably indulged more than the others.

"My earliest memories are of being taken to watch trains go past and sitting on the platforms of Doncaster station with my father or brother Ernest. They would describe each engine, tell me their names and how and where they were built. On several occasions, and before my father died, I was taken round the GNR's workshops and remember very clearly the noise and smell of oil mixed with steam and smoke. Early on I began collecting pictures of locomotives and carriages and read all I could find. I traced some of the engineering drawings I came across and gradually learnt how the locomotives worked. With the GNR the biggest employer in the area it seemed more than likely that I would end up working there, which was a prospect that did not worry me.

"I attended Doncaster British School until August 1911 where they taught me the three 'R's', as they called them then, and used the cane very often, but the teachers did encourage me to read and make use of the Free Library at St. George's Gate. It became one of my regular haunts, drawn by the books and periodicals and the warmth of an open fire on a cold day."

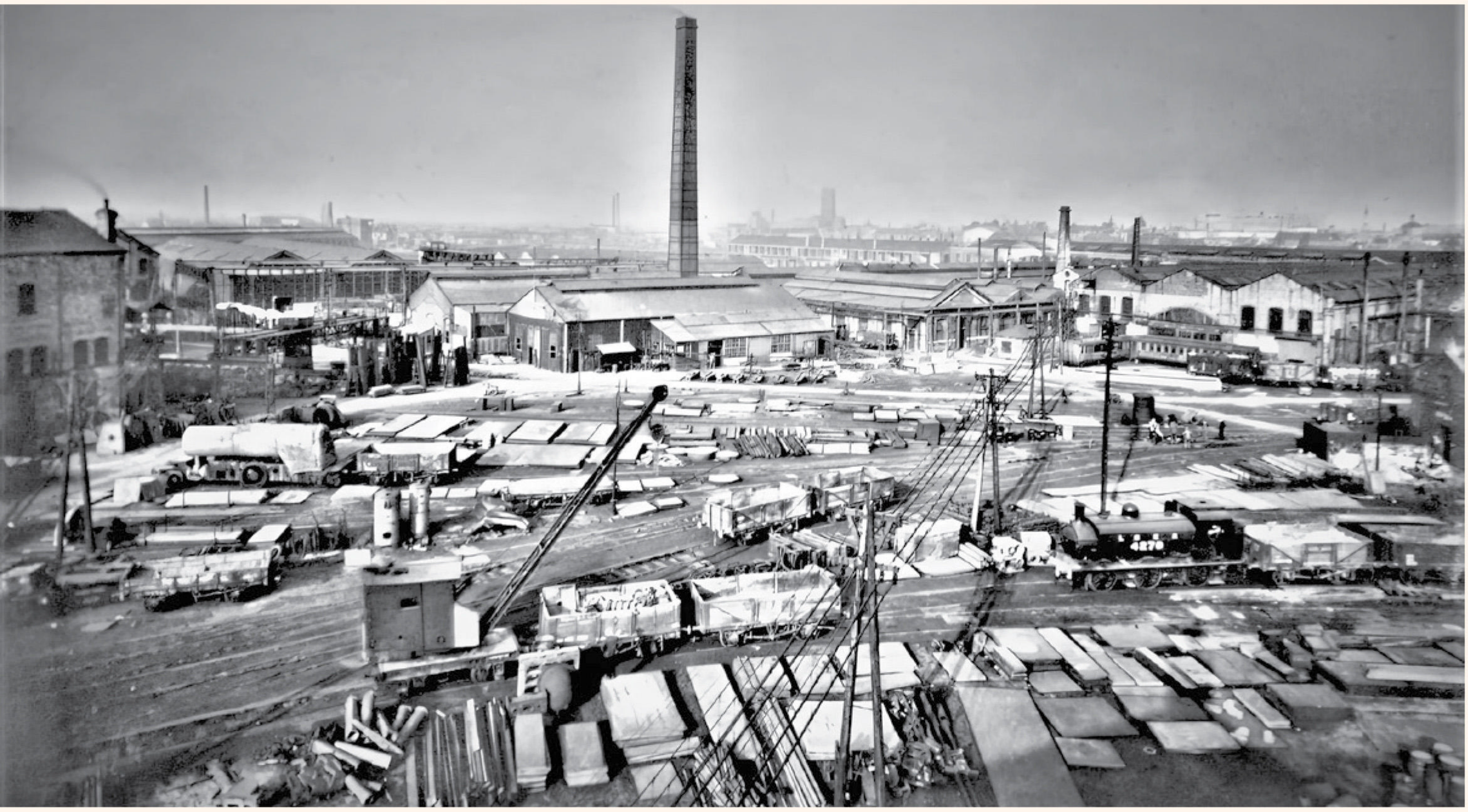
As he approached the end of primary education his future was probably the subject of much discussion. With reports from his teachers confirming how bright he was, there would have been an ambition to attend the best senior school possible. With the cost of private education well beyond his family's means, the next best option would have been Doncaster Grammar School, which could boast an enviable academic record. There was still a question of cost to consider, but for the less well-off there were scholarships to help allay the expense and this scheme now benefited young Bert, so in the late summer of 1911 he made his way to the grammar school where he would spend the next three years. He later wrote that:

"It was a little daunting but I quickly made friends with several boys, including John Forster, who started at the same time. We were fellow cyclists and had much in common. He was a happy boy who loved sport. Like many at that time he did not survive the war, dying, I believe, towards its end."

The two men who probably shaped Spencer's career more than any other. LEFT – **John Bazin, Assistant Works Manager at Doncaster who led Spencer through his apprenticeship to a permanent post in the Drawing Office.** RIGHT – **Nigel Gresley who took the young man and gave him the opportunity to demonstrate and develop his great skills.** (Author's Collection)

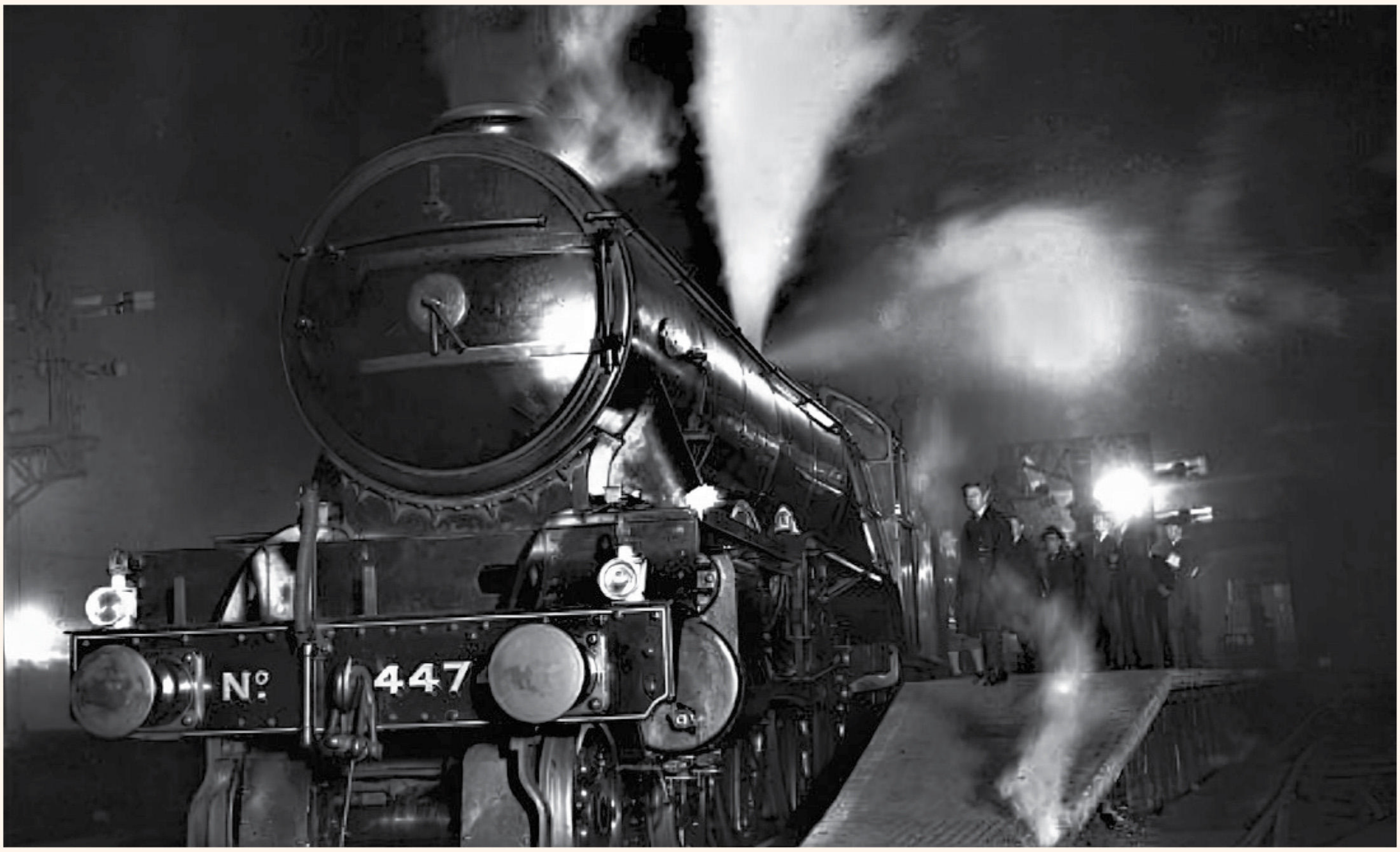
EY'S MASTER ENGINEER

BY TIM HILLIER-GRAVES



The GNR, then LNER workshops at Doncaster in th early 1920s - until 1925 a daily scene for Spencer (Author's Collection)

With only a comparatively short period in which to make his mark it seems that Bert didn't waste a moment of time and made full use of the facilities on offer at the school. His reports reflected the effort he made and his success, particularly in the field of science and engineering. So when graduating in 1914 it was perhaps inevitable that he would pursue a career that might fully exploit



During his life Spencer was an avid collector and taker of photographs, many of which he did not date or list any other details. This photo of No.4474 *Victor Wild* in the 1920s or 1930s is just such a case, though the location appears to be King's Cross. In March 1925, and encouraged by Spencer, Gresley directed that this engine was modified with a set of piston valve rings being fitted to its centre valve in the hope that this would create a longer steam lap and improve its performance. An improvement was noted but more work was required as Spencer, diplomatically, made clear. (Bert Spencer)

Pacific No.2549 *Persimmon* was one of the engines to benefit from Spencer's work on improving the type's performance. With Gresley still loath to change his design two more A1s – No2549 and No.4480 *Enterprise* – were fitted with the modified valve gear first tried on No.2555. Over the course of the summer season that followed both engines ran well and finally convinced Gresley that the changes pursued so doggedly by his young assistant were of great value. (Bert Spencer)

these growing skills to the full. And here apprenticeship schemes run by the Great Northern Railway proved to be a tempting draw, under the tutorship of Nigel Gresley, the Locomotive Engineer, and his Assistant Work's Manager at Doncaster, John Bazin.

Therefore the GNR beckoned and after passing through the selection process to its workshops he went, on 31st July 1914, to begin his five-year apprenticeship. At the same time, he enrolled at Doncaster Technical College to study science and engineering and attended his first classes there a month later. Of these two training schemes he later wrote that:

"There were ten of us starting at the same time, but only two attended college from the beginning. I had stated a preference for learning draughtsman's skills when speaking to John Bazin and later the Locomotive Engineer, which they, having questioned me closely, thought to be a good idea. They also looked through a number of drawings I brought along to the interview, having been encouraged to do so by my mother, and seemed favourably impressed.

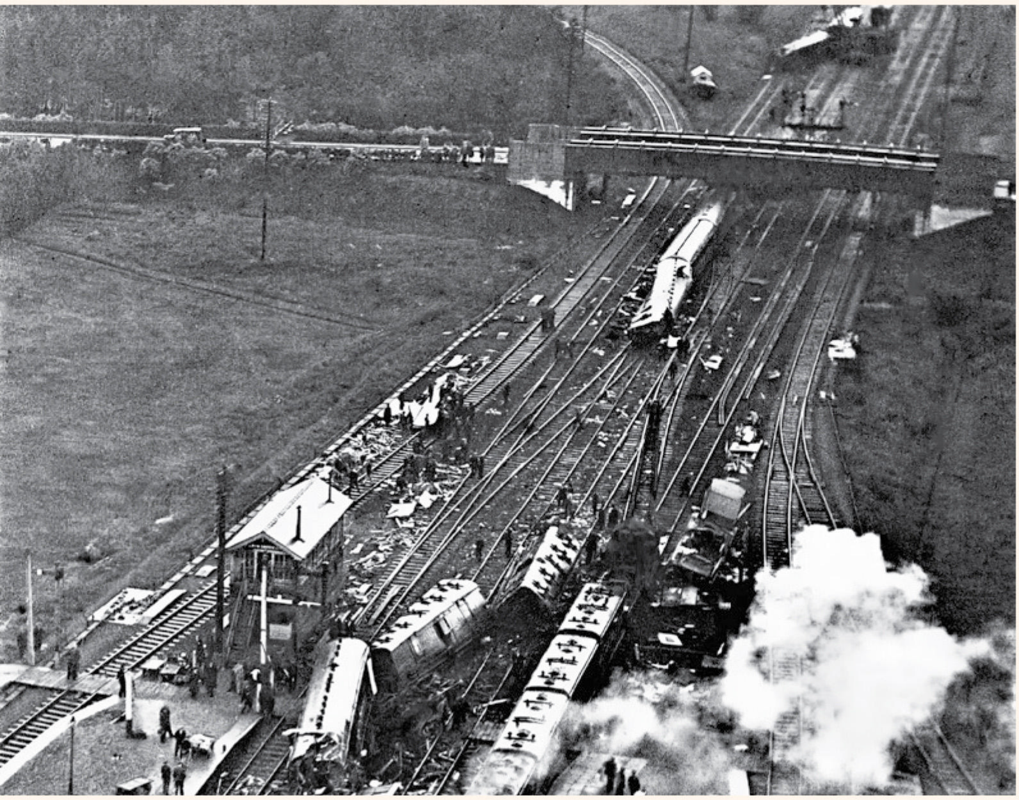
"Over the next five years I spent time in each of the workshops observing what they did and learning to use much of the plant and machinery. It was interesting but not particularly enjoyable. I much preferred the cleanliness and order of an office job. So I was happy when from my second year onwards I spent ever more time in the Drawing Office, where the Chief Draughtsman, William Elwess, closely supervised my education. The classes at college, which included mechanical design and construction, freehand, perspective and technical drawing, advanced mathematics and much more, complimented all that I learnt under Elwess. Throughout the five years Bazin oversaw everything I did and was quick to criticise and encourage when necessary. Despite the difference in rank he became a friend and something of a father figure to me."

Having successfully qualified, Spencer quickly found a permanent post in the GNR's Drawing Office and settled down to begin work as a junior draughtsman. It was work that seemed to suit him and he later decribed day-to-day life working closely beside Gresley and Elwess:

"Gresley would often visit the Drawing Office and happily discuss with one and all his ideas. He liked to give tasks to the young and inexperienced men, to test them and see how they would react. It may have been one of the ways he learnt himself when starting out and it certainly worked. He would set aside time in his very busy schedule to listen to their answers and proposals, with the full agreement of the Chief Draughtsman, who might in other circumstances have felt by-passed.

"He believed that learning didn't have a limit and should be pursued as a matter of course through education and the study of other people's work in many fields of research. We were encouraged to join relevant bodies such as the IMechE and ILocoE, participate in their work and keep up to date by reading their journals as well as

Experimentation was the cornerstone of Gresley and Spencer's life at King's Cross as the photograph above taken in the early 1930s bears witness. The newly built marine-boilored W1 4-6-4 'Hush Hush' rests besides the 1924-built A1 Pacific No.2576 *White Knight* which was modified in 1929 with the addition of an ACFI feed water heating system for test purposes. (Bert Spencer)



The scene of carnage that faced Spencer at Welwyn on the 15th June 1935 as he began his investigation. Dawn revealed the full extent of the damage caused to the 10.53pm departure from King's Cross not long into its journey to Newcastle when hit from behind by the 10.58pm to Leeds. The rear carriages of the train, as Spencer recalled, "simply exploded when hit, killing and maiming many in the process and leaving body parts all over the track". (Bert Spencer)

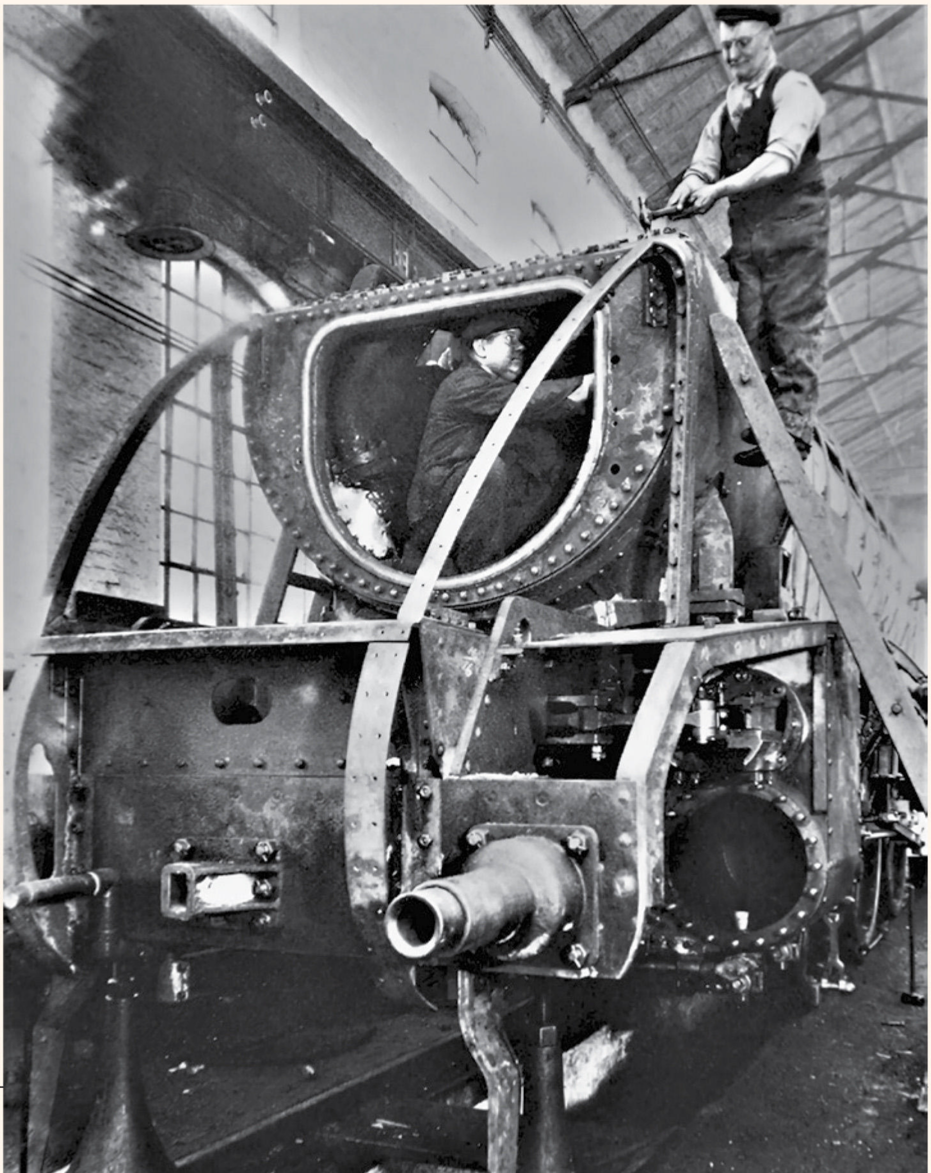
the *Engineer, Gazette* and other magazines, but also follow the course of various patents, files of which we retained. I was also encouraged, early in my career, by Bazin to submit and present papers, which I did on three occasions (at meetings of the ILocoE in 1924 – numbers 158,166 and 171) and comment on others. We were also encouraged to attend institution annual dinners where contacts could be made and renewed.

"William Elwess, and later on Harry Broughton, were also very keen on newcomers getting involved in this way and even encouraged us to raise issues we thought important, provided that we were sure of our ground. Gresley's influence on my career was only very slight at the beginning and was limited to a few special tasks. For example, he asked me to consider the layout of the Pacific's cab. In this I adopted a side-window layout similar to those seen on some Great Eastern engines. I was pleased with the result and showed Sir Nigel during one of his visits. He liked it and ordered it to be fitted in place of a traditional GNR cab. After that the number of small tasks he set me increased."

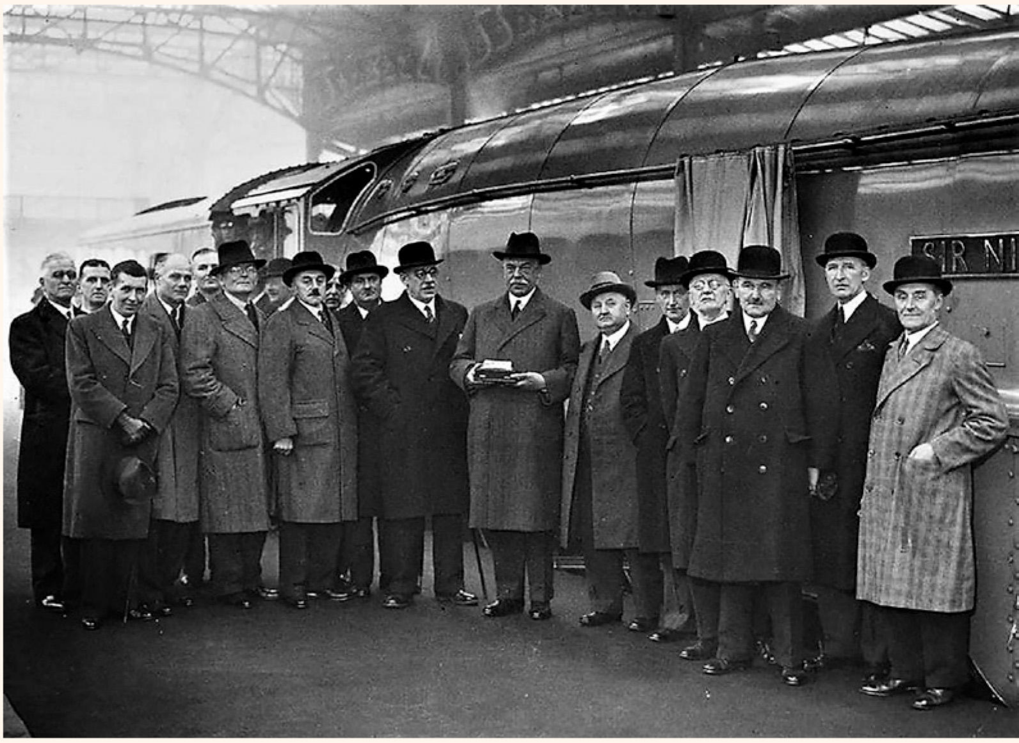
And so time marched on with Spencer gradually learning his trade and seeing his influence begin to grow under the guiding hands of Gresley and Elwess. However, many things changed in 1923 when the GNR was absorbed into the new London & North Eastern Railway Company as amalgamation took effect. Initially Spencer remained at Doncaster when Gresley, accompanied by Oliver Bulleid, as his Principal Assistant, moved to the company's new HQ at King's Cross. However, in 1925 he followed them there, selected by the CME to be his specialist assistant on locomotive matters. It was a choice undoubtedly encouraged by Spencer's work for Elwess and the issue of Gresley's choice of three cylinders for his engines accompanied by a 2 in 1 conjugated valve gear and its perceived shortcomings on which Spencer had very clear ideas, as he recalled:

"From the earliest it seemed to me there was room for improvement, especially in the matter of coal consumed and the problem stemmed from the short travel valve gear. It seemed to me that fitting a long travel valve gear that increased the expansion ratio was the obvious solution. Alternatively, discard Gresley's conjugated valve gear completely and revert to two cylinders or replace the 2 to 1 with three independent sets of Walschaerts valve gear."

From as early as 1922/23 Spencer recognised that the Pacifics' performance could be greatly enhanced and his quick mind identified the solution, but persuading Gresley to adopt these ideas would prove to be a long drawn-out business. A lesser man might have thrown in the towel, but Spencer was made of sterner stuff and with



Throughout the A4s construction programme Spencer kept a photographic record of all that happened in the workshops at Doncaster, including this photograph. (Bert Spencer)



On 26th November 1937 engine No.4498, the 100th Pacific built by the LNER, was named after the company's talented CME. For the occasion a number of Gresley's team, past and present, gathered together to witness the event and pose for this extremely rare photograph. Left to right – W. Massey, formerly Chief Clerk to the CME, H. Harper, the current Chief Clerk, B. Spencer, Chief Technical Assistant to the CME, G. Musgrave, Loco. Running Shed Supt,. Scotland, W. Brown, Carriage Works Manager, York, D. R. Edge, Personal Assistant to the CME, A. H. Peppercorn, Locomotive Running Supt., Southern Area, F. Wintour, formerly Mechanical Engineer, Doncaster. O. V. S. Bulleid, CME Southern Railway, Harry Broughton, formerly Chief Draughtsman, F. Eggleshaw, the Works Manager at Doncaster, E. Thompson, Mechanical Engineer, Darlington, T. Street, Chief Draughtsman. (Bert Spencer)

great diplomacy, working quietly behind the scenes, he gradually moved the debate forward. His case was greatly helped by the 1925 Exchange Trials when a Gresley A1 was matched against a GWR 'Castle' 'Class' with long lap valves. During these exercises the LNER engine was deemed to perform less well with the result that Spencer could record that:

"Gresley began to experiment with long lap valves on the Pacifics. The valve gear of engine No.4477 *Gay Crusader* was modified and trials were carried out with valves having $1\frac{5}{8}$in lap. The results were most satisfactory in spite of the fact that only the minimum amount of alteration had been made to the existing valve gear.

"The success of this experiment led to the fitting of the completely redesigned outside valve gear originally proposed in 1924... The first engine to be fitted with the new valve gear was No.2555 *Centenary* [work completed in March 1927] and in comparison with Pacifics having the original valve gear the average coal consumption with trains of approximately 500 tons between Doncaster and King's Cross was reduced from 50 to 38lb per train mile.

"All existing Pacifics were subsequently altered in a similar manner to No.2555 [as and when they entered a period of maintenance or repair] and the modified gear was fitted on all future engines of this type. The improved engine performance was an important factor in the successful running of the non-stop 'Flying Scotsman' between London and Edinburgh inaugurated on 1st May 1928 and the high speed trains that went into service some years later."

From the way he wrote one could easily assume that Spencer played little or no part in this process, such is the way with modest people who are also team players. However, a truer picture may be gained from Harold Harper, Gresley's Chief Clerk, who witnessed these events first hand and later reported that:

"It ought to be known that Mr. Spencer [who in 1947 had just presented a paper to the ILocoE describing Gresley's locomotive achievements] should have some credit for the introduction of the long lap valve gear on the LNER Pacific engines… it was largely through his efforts that the decision to alter the gear was made."

This would prove to be one of many occasions where Spencer's engineering skills would help direct Gresley to new, and possibly better, solutions but, as he later wrote, his role as assistant encompassed many tasks, not simply the design of locomotives:

"I believe that one of my main roles, and that of the Chief Clerk, was to support Gresley by providing him with an outer office that kept disturbances down to a minimum while maintaining a degree of confidentiality. Men of his great intelligence need time to think without the many distractions that inevitably come their way. Beyond that I would assist him in refining the technical ideas he was constantly developing and converting his rough sketches into a more formal specification for the Chief Draughtsman to consider. I then acted as a go-between to make sure all were clear on what was required and the CME's instructions were complied with and sorting out any problems that might arise."

And he later added: "I kept many of his sketches and remember well him calling to me 'Spencer, here's something I want you to look at, get me out some drawings, will you?, and then being handed several sheets of paper, often lined, covered with rough sketches. A few days later we would pore over these plans and gradually his ideas would take shape at which point he would call in the Chief Draughtsman and Bulleid to get their point of view. More often than not he

Working at King's Cross gave Spencer free rein to watch and photograph the engines he helped design in operation. Liverpool Street station also became a regular haunt. On the back of this print he has simply written "with Cook observing No.4485 departing from King's Cross with an express for the north", but there is no date or other detail. Spencer, it seems, is the figure nearest the camera. A4 No.4485 was named *Kestrel*. (Bert Spencer Collection)

wouldn't give them any forewarning of what he would lay before them, believing that first reactions were always more revealing."

From the information available it is probably true to say that Spencer played this role exceptionally well. He served Gresley very effectively in London for sixteen years, quietly going about his business, easing the passage of work and contributing much in the process. His wife, Elsie, probably summed up the degree of commitment her husband had towards Gresley when writing that:

"Bert worked very long hours, quite often six days a week. On many occasions he did not get home until very late at night, having waited in the office for the CME to return from a trip or simply to complete a pressing piece of work. He admired Sir Nigel tremendously and felt it was an honour to serve him. He never complained.

"At home he set up a small office equipped with a drawing board and library and would quietly work there when the opportunity arose. He would often show me very detailed drawings of the Pacifics, particularly the streamlined engines and much more, often adding the words 'Gresley wants these out very quickly'. Work was his relaxation, although he enjoyed regular trips to the cinema as well, comedy films being his favourites – Buster Keaton, Laurel and Hardy, whom he met some years later, and Will Hay."

And in this role sitting beside Gresley at King's Cross Spencer would be closely involved in all the key locomotive developments that the CME initiated, including the constantly evolving Pacifics, the experimental marine-boilered 4-6-4 W1, the 2-8-2 P2s, 4-6-0s, V1/V3 tank engines and much more. However, it wasn't simply the design of each engine that concerned him, but also the constant evaluation and testing of the LNER locomotive fleet, with accident investigation added as and when disaster struck, which it seemed to with gloomy regularity. This was an unpleasant duty, yet one which Spencer approached unflinchingly no matter what the cost to him personally, having to view from close quarters the loss of human life. There was no better demonstration of this than in June 1935.

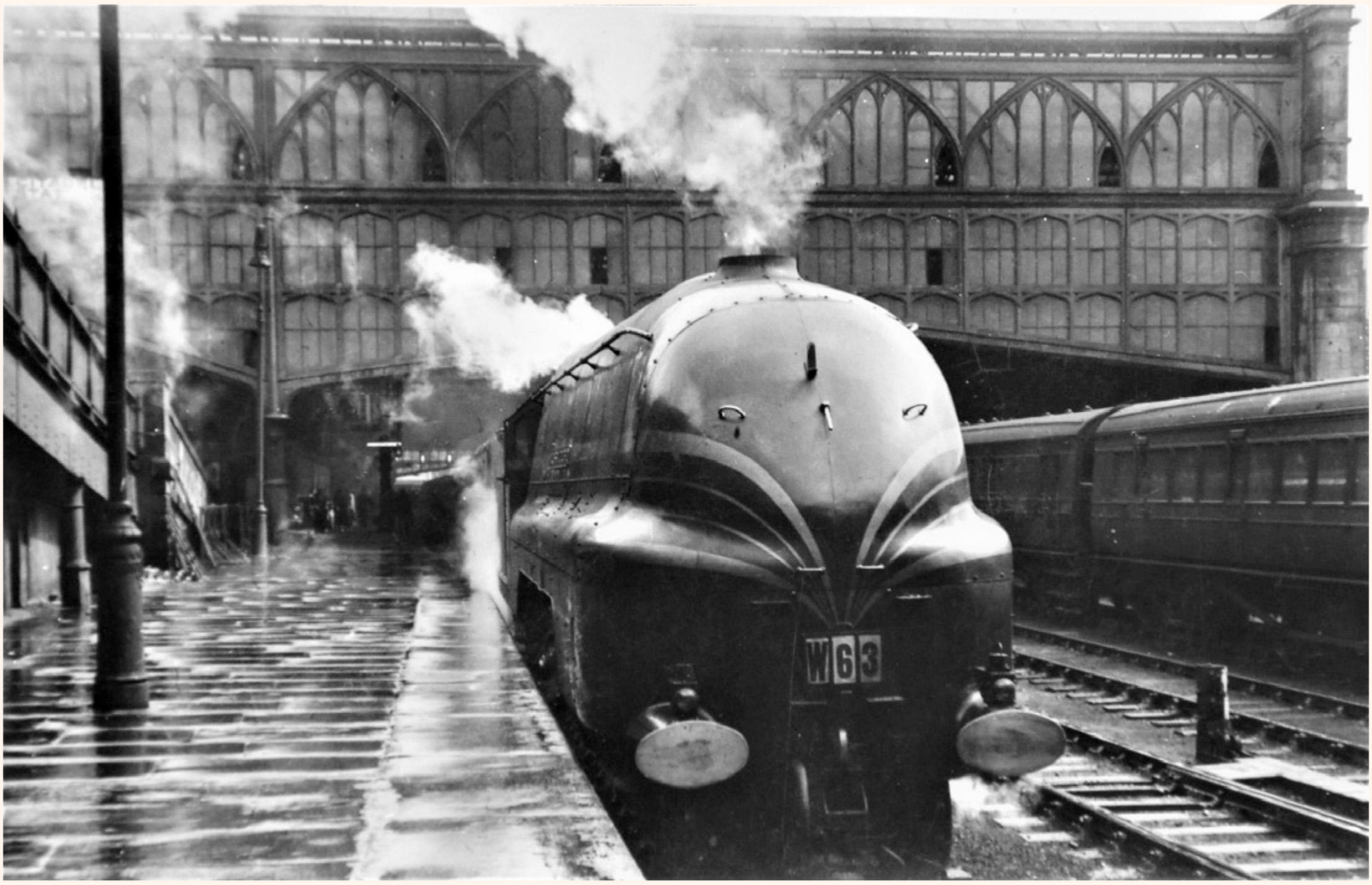
Having gained extensive knowledge of investigating major incidents involving locomotives and become Gresley's eyes and ears in the process, he had to drop everything on 15th June and race to Welwyn on the outskirts of London where two trains had collided. Of these events he later wrote:

"These were a terrible few days and not easily forgotten. In the very early hours of the morning Gresley received a 'flash' report that there had been an accident with two engines and there had been many fatalities. When the CME rang me at home he had very few details and asked me to get to the crash site, twenty or so miles away, as quickly as possible and assess whether the condition of the locomotives had played a part in the accident. One never knew what to expect in situations such as this and so there was a degree of apprehension in my mind. On these occasions you simply had to put these thoughts to one side and concentrate on the job at hand. This was something that four years later, followed by the 'Blitz', became our daily routine. And yet, nothing I saw during the war years could compare to this accident at Welwyn station."

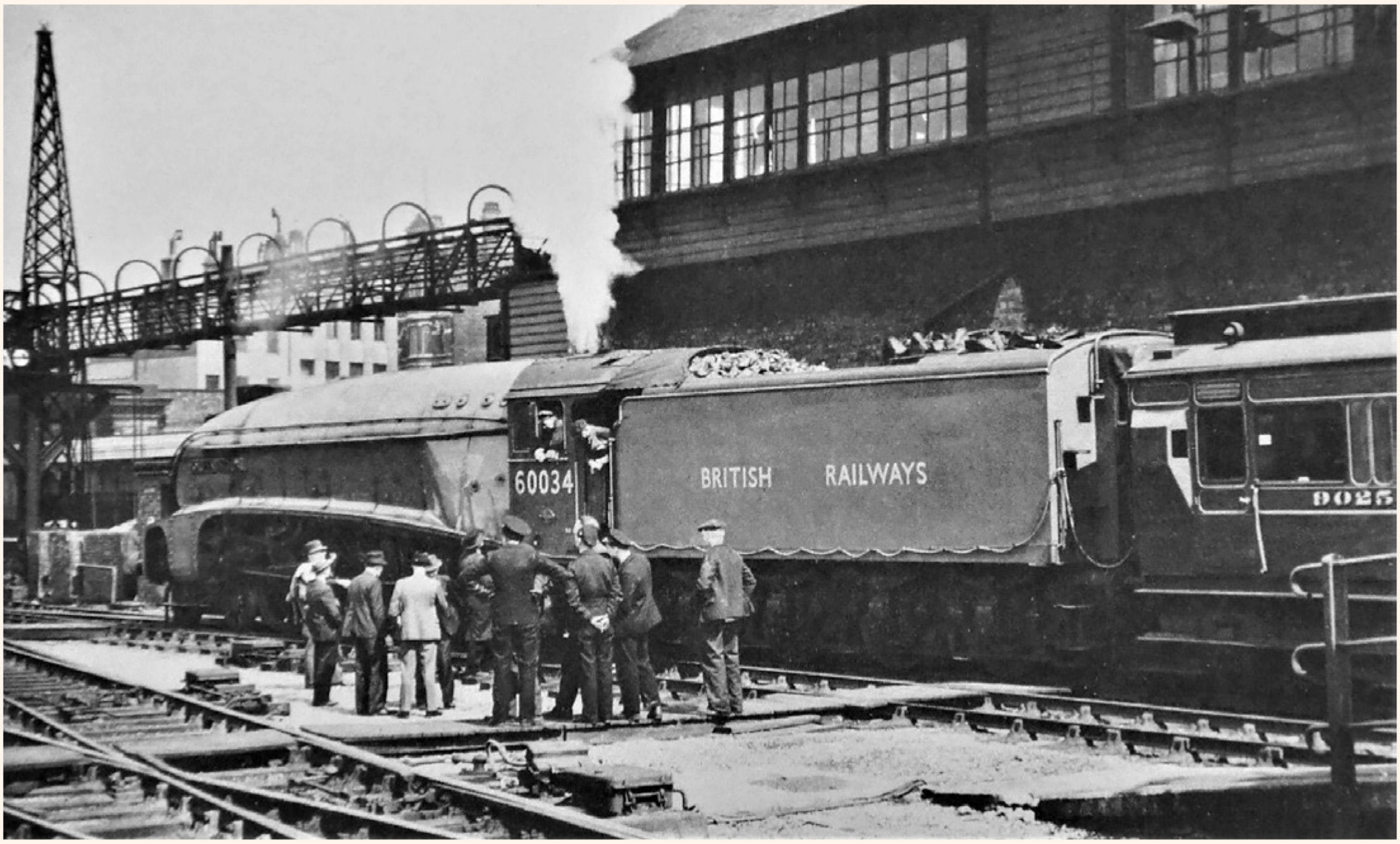
Bad days such as this have to be endured and in 1935 Spencer had the development of the new A4s to provide a distraction, as Gresley's plans for steam locomotion on the East Coast Main Line reached their peak. These events have been recalled many times over the years, but not Spencer's part in this project.

"Most of 1935 was taken up with the A4's design. At the same time Norman Newsome spent considerable effort on the inner workings of the streamlined carriage set, their external profiling being considered by me as part of the trains overall outline. For this purpose, I liaised with Frederick Johansen [the aerodynamics expert who by then was working for the LMS, having been an employee of the National Physical Laboratory where he had been advising Gresley since 1928/29] on a number of occasions and gathered his thoughts on these issues, modifying the design where necessary.

"As planning proceeded and his orders were given Gresley stood back from the task and allowed his managers to manage. During other locomotive projects he had chased and harried his Mechanical Engineers, but on this occasion chose not to. Nevertheless, he still continued to produce rough sketches highlighting some design issue for me to expand upon before passing those I thought appropriate to the Chief Draughtsman. By this stage there was a noticeable slowing down in his daily routine; the dynamic, constantly busy man we had known for many years stepping back due to ill-health.



Spencer and his wife liked to holiday in Scotland and just before the war journeyed there and back behind Stanier Pacifics. He was obviously interested in what the opposition could do and took or collected many photos of the LMS streamliners for his archive, as witnessed here with this unidentified engine at Carlisle. (Bert Spencer)



In 1948 Spencer played a central role in BR's Interchange Trials and authored the final report. Peppercorn was prepared to let any of the A4s participate, but Spencer ensured that the three chosen were those fitted with the Kylchap exhaust system, which included No.4468/60022 *Mallard*. He was convinced of their superiority and wished BR to adopt this system more broadly. The picture above captures No.60034 *Lord Faringdon* about to depart from King's Cross during the trials with dynamometer car attached. (Bert Spencer)

"The main planning effort fell on Tom Street and his team at Doncaster who ensured that all drawings were completed on time, material estimated and ordered and specialist items procured. from suppliers…Throughout this programme Newsome and I visited Doncaster frequently to discuss progress and agree any changes the CME made to the design."

These discussions appear to have been key to the successful completion of the first locomotive and streamlined carriages in September 1935, only six months after the project had been approved. For Spencer it meant many long days of work and many sleepless nights as he attempted to ensure Gresley's wishes were met in a practical, realistic way. And the problems came thick and fast, some of them minor, though with significant consequences for the safe running of the train as he later described:

"During the wind tunnel experiments the top of the engine and cab on the original model were in one straight line. This was satisfactory in a head wind, but in a side wind a pressure was set up on one side of the boiler and a partial vacuum created on the other, as a result of which smoke drifted down on the lee side in spite of the streamlining. The difficulty was overcome and the smoke was lifted by cutting back the chimney casing to allow air to pass from the windward to the lee side."

Bearing in mind the huge amount of work completed in such a short time the chance of failure was high, but the A4s performed exceptionally well from the beginning.

"As the months passed and the A4s continued to perform outstandingly, unofficial reports were reaching us that the drivers were taking liberties and going very fast when the opportunity arose. Certainly the Flaman rolls often recorded speeds of 115mph and over or appeared not to have been working on other trips south where high speeds were possible. With the German world record for speed of May 1936 by their Class 05 locomotive, still rankling, spurred on by what was happening in that country with Hitler, it little surprised us that an A4 might be given its head. This proved to be the case.

"So permission was given for a run to take place on the coming Sunday (3rd July) knowing that the track would be clear of heavy traffic, apparently without consulting Wedgwood or the powers that be. Gresley also approved the use of No.4468, part of the 'Coronation' set and a dynamometer car. By this stage this A4 was four months old, well run in, and described by the footplate crew as being a 'good un'.

"The CME made it clear to Douglas Edge, Norman Newsome and myself, that he expected to see the engine let go if the conditions were suitable, but gave no other instructions. However, his intentions were clear to all three of us and Edge then briefed Bernard Adkinson, Assistant Motive Power Superintendent at King's Cross, Inspector Jenkins, Driver Duddington and Fireman Bray. The CME instructed me to remain at King's Cross and oversee the collection of data when the train returned to London and report the results to him."

Events on 3rd July 1938 are now etched into railway history, ensuring the reputations of the exceptional team that created the A4s, but a year later Britain was at war and the days of record breaking came to an end. Gresley did not see out the war, dying in April 1941, and his demise led to Edward Thompson's promotion and a change of direction for Spencer and many others in the CME's Department, as he later recalled:

"Just after Sir Nigel died Mr. Thompson sought me out and thanked me very courteously for all my hard work. He wanted to discuss my future and told me that he would be based at Doncaster so wouldn't need an assistant in London. He suggested that I could be posted to Stratford as assistant to the Mechanical Engineer instead. Being concerned about my wife's safety [and his mother, who still lived in Doncaster and was becoming increasingly frail] I didn't wish to remain in London and he proposed that I move to Doncaster or Darlington instead.

"He went on to explain that he would have less need for personal technical assistants and because of the pressing need for rolling stock and wartime production he preferred men with this background. He added that the Chief General Manager was of the opinion that there would be little scope for new locomotives whilst the war lasted so my current task would lapse for the duration. After some consideration, having listened courteously to my views, he suggested that I could be employed in another role in his Headquarters assisting the new Mechanical Engineer there. This suited my wife and I, especially as we both came from the North-East of England.

"I was initially employed in planning workshop tasks across the LNER with Cyril

Elwell ensuring that all ran smoothly. I was also given responsibility for co-ordinating all 'Government Work in support of the war', which was quite a wide brief, but meant producing monthly reports for Ministry of the Transport departments. However, Mr. Thompson suggested that I maintain Sir Nigel's papers and continue working on the ideas he had pursued regarding steam locomotives, but with an emphasis on alternative cylinder arrangements. Later on, I was called to the CME's office and it was agreed that I would work full time on [the LNER's] standardisation proposals. Over the next four years I did much personal work for the CME and sat near him in his office at Doncaster."

It was an arrangement that continued under Peppercorn and closely involved Spencer in the continuing Pacific programme, then British Railways' own locomotive plans. During this period, he found himself turning historian for a short period as he later related:

"In 1946 and '47 Pep encouraged me to prepare a paper for the Institution of Locomotive Engineers describing all the engine development programmes undertaken by Gresley. This I did and towards the end of his time I suggested that I continue this exercise to include the years 1941 to '49. He laughed and said 'No one will be interested. The war then nationalisation put paid to all our plans. It will all be diesels and electric trains from now on."

Shortly after the railways were nationalised in 1948 a series of Interchange Trials was held to help establish any design elements, developed by the 'Big Four' companies, which might feed into BR's own plans for new standard classes of locomotives. Spencer was selected to be the Eastern Region's representative but then, due to his great experience, was appointed chairman of the management committee. In this role he oversaw the trials and then authored the final report before returning to Doncaster full time as one of Peppercorn's Mechanical Engineers, then his Chief Assistant. However, essentially, Spencer was a moderniser and whilst still actively pursuing ways of improving steam locomotives thought BR's standardisation project:

"A waste of time, money and effort when a more rapid advance on electrification and dieselisation could have been made and taken the railways forward. It was a huge mistake, even though many of the new standard engines, especially the 9Fs, were quite outstanding.

"Although it would have been easy to cling to the past and see steam locomotives in service for many more years, by 1958, when I retired, the lack of real progress towards diesel or electric replacements was something I regretted. The technology was sufficiently advanced to have achieved much more and the money spent on all those new Standard engines could have been better invested on diesels. I was impressed by Ivatt's two Co-Co engines, Nos.10000 and 01, that appeared in 1947/48; though rough around the edges they should have been refined and built in greater numbers. Likewise, the 'Deltics' could have entered service much earlier than they did. Luckily there were companies prepared to invest and experiment in new technologies which meant that when BR finally bit the bullet they could tap into their work. I did find the 'Deltics' interesting and enjoyable and rode in the cab of the prototype on a number of occasions, most notably on 26th March 1958 when running from Liverpool to London.".

As these plans for the future slowly unfolded Peppercorn departed but Spencer remained the CME's Chief Assistant first under John Harrison and then Kenneth Cook, who came to Doncaster from Swindon in 1951. With Cook he developed a close rapport and was trusted to take the lead in developing both diesel and electric projects for the Region. Although he retired before they entered servic, Spencer took a leading role in evaluating English Electric's 'Deltic' in the run-up to BR ordering 22 for the Eastern Region. It was a task that sat beside his work in overseeing the production of three new Standard classes of steam locomotive at Doncaster and Darlington.

After 45 years of successful service some public fanfare might have been expected when he walked through the gates of Doncaster for the last time. But this was not Spencer's way. He preferred to slip away to begin a new life, allowing any credit he had earned to rest on the shoulders of the men he'd served so well. And here he always remembered Gresley and trumpeted his achievements for the rest of his life. However, even allowing for his great modesty, he might have been pleased to read Ernest Cox's description of his own contribution to railway history in his book *Locomotive Panorama,* which appeared in 1966:

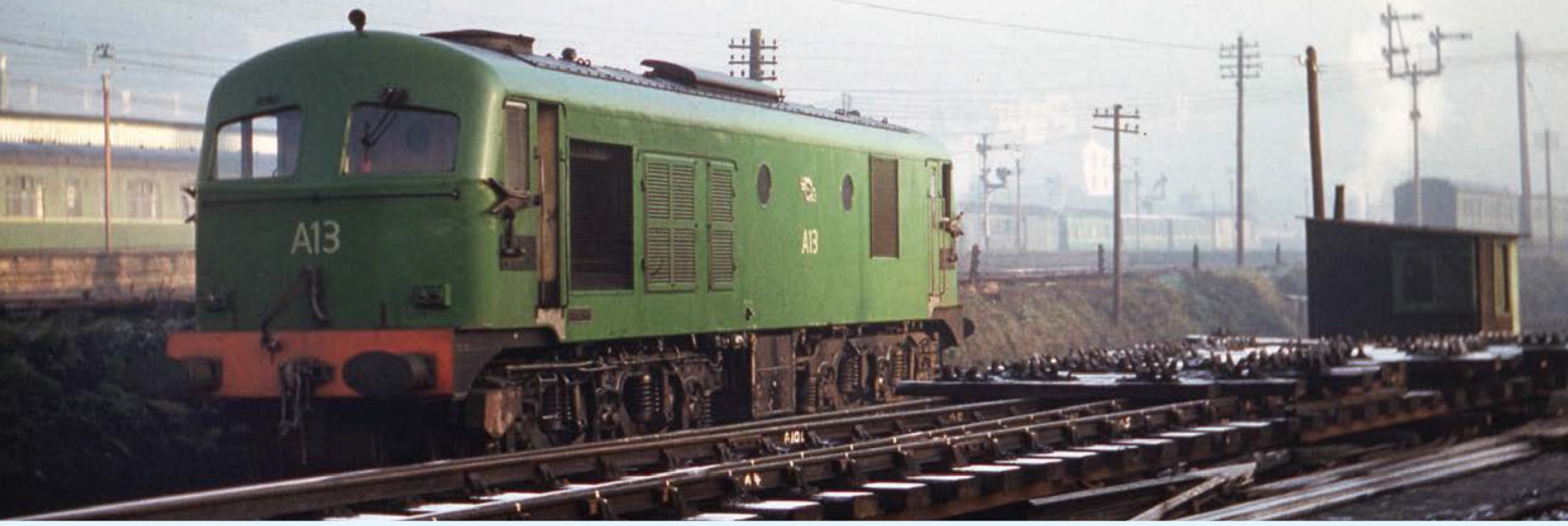
"To such men as Gresley, Maunsell, Stanier, George Ivatt and Riddles, the historian must rightly accord the direction and authority which made this work possible. To the lesser-known names of Tom Coleman, Bert Spencer, James Clayton and Sam Ell, among other unsung heroes, goes the credit for the original thought and application which assured its success."

High praise indeed for Gresley's master engineer.

Spencer has written on the back of this print 'celebrating the last steam locomotive built at Doncaster'. In this case it is Standard Class 4 2-6-0 No.76114, one of 70 built at Doncaster between 1952 and 1957. To mark the occasion a number of photographs were taken and published. This one shows senior members of the Management team and supervisors, including Spencer who sits in the front row fifth from the left. This historic day was perhaps the appropriate moment for him to bow out.
(Bert Spencer Collection)

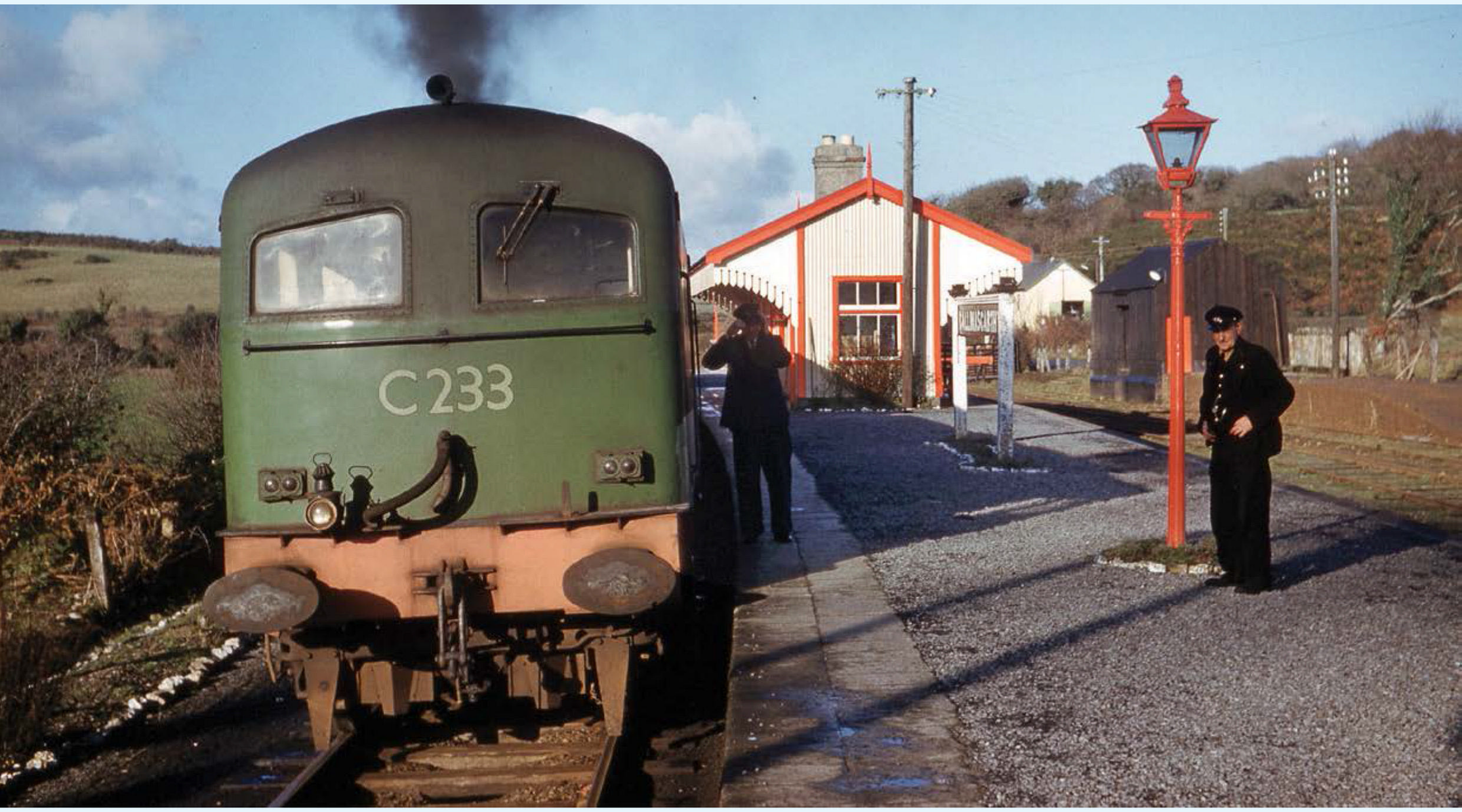
CIE – MODERN AND ANCIENT

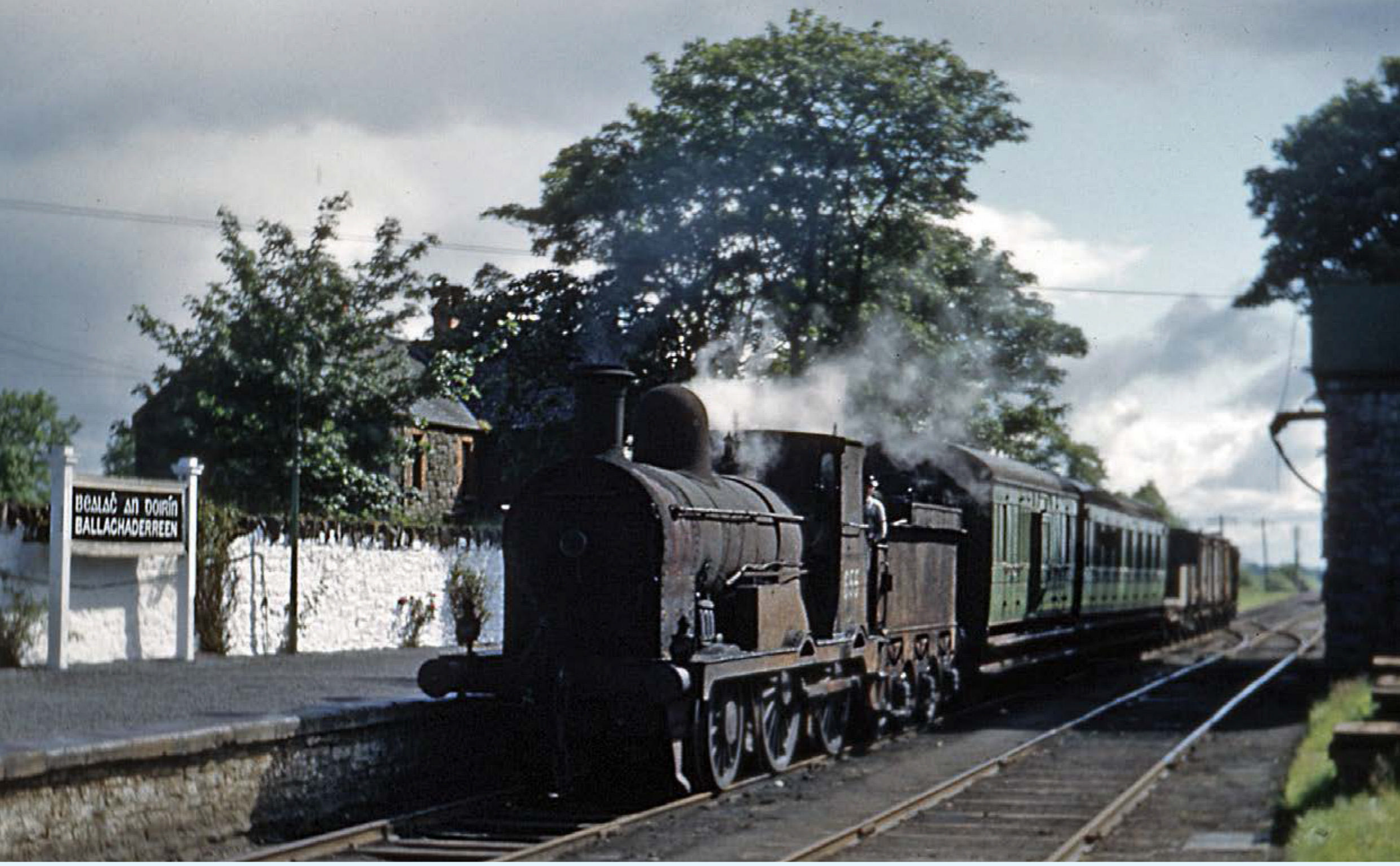
Photographs from the COLOUR-RAIL Collection with caption notes by **DAVID MOSLEY**



ABOVE: **In charge of the railways in the Irish Republic, Córas Iompair Eireann was some years ahead of British Railways when it came to dieselisation. Following the successful introduction of AEC-engined diesel railcars, an order was placed in 1954 for 94 main line diesel-electric locomotives of two types. For both types the original engines were provided by Crossley Brothers of Manchester with electrical equipment provided by Metropolitan-Vickers. Of sturdily stylish appearance, both classes unfortunately failed to live up to expectations and it wasn't until they were rebuilt with General Motors engines from the late sixties onwards that they really began to prove their worth. The 60 locomotives of the A Class were Co-Cos with a 1,200hp engine and No.A13 is seen here at Glanmire Road sidings, Cork, on 14th January 1962. The locomotive is in the second livery given to the class, the original silver being no match for the exhaust produced by the Crossley engines, and the tablet catchers are prominent at the 'corners' of the locomotive. No.A13 was re-engined with a 1,325hp General Motors engine in January 1971 and was withdrawn from service in October 1992. The line behind the locomotive leads from Cork down to Cobh, formerly Queenstown – final call for the *Titanic,* anyone?** (Colour-Rail.com/ FIE05094)

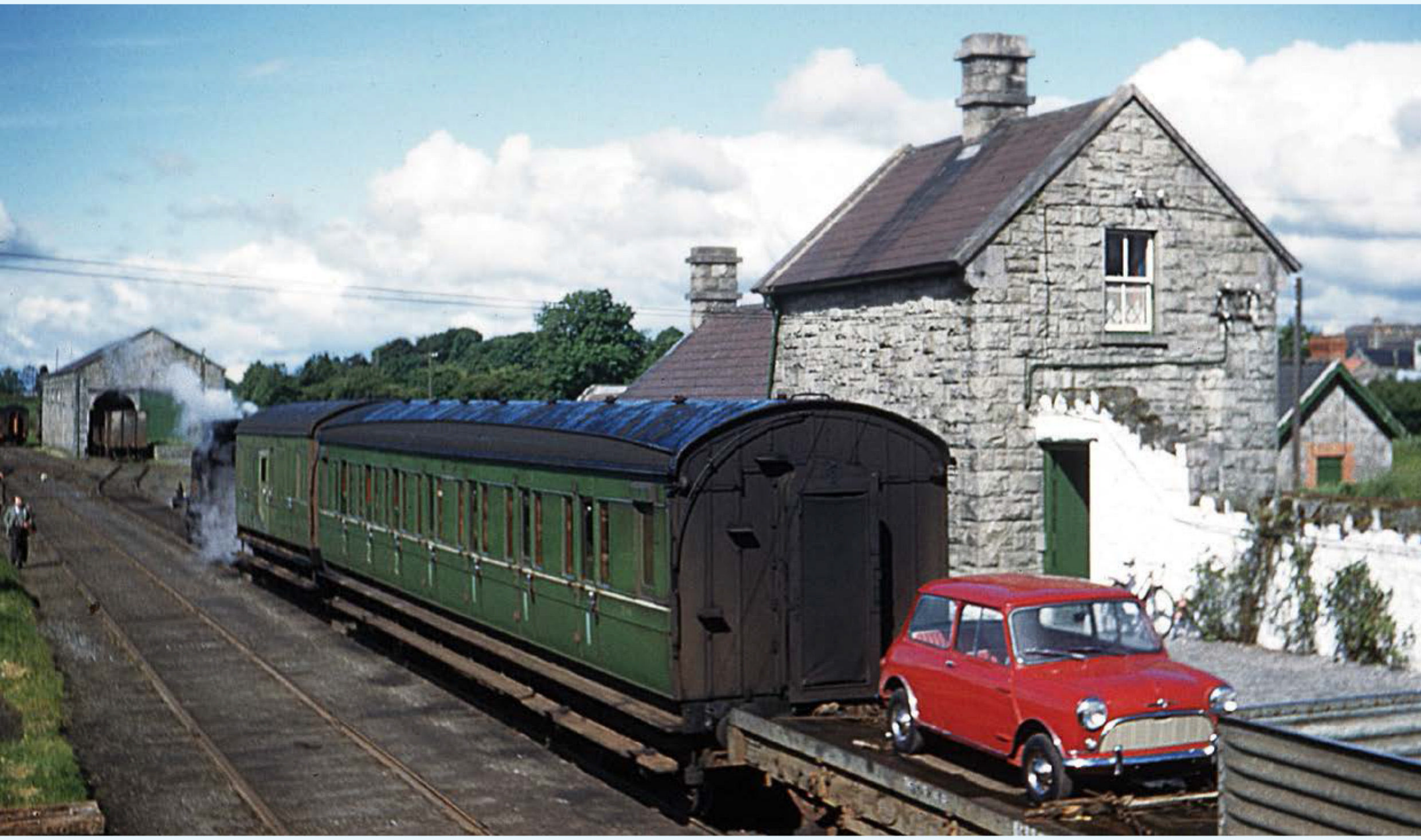
BELOW: **The remaining 34 locomotives of CIE's original modernisation order were the C Class, Bo-Bos with a 550hp engine. No.C233 is seen on a sharp January morning in 1961 at Ballinascarthy on the Clonakilty branch of the former Cork, Bandon & South Coast Railway. The locomotive's Crossley engine is demonstrating its ability to ruin a decent livery and tablet exchangers are prominent by their absence – although speed was probably not a major consideration on the railway byways of Co. Cork. No.C233 was re-engined not once but twice. In May 1966 a 1,200hp Maybach engine was installed and the locomotive was renumbered B233, then in August 1980 a 1,100hp General Motors engine replaced the Maybach. No.233, as the locomotive had now become, was taken out of service in 1985 and finished up, unlikely as it may sound, being disposed of at the renowned Vic Berry scrapyard in Leicester.**
(Colour-Rail.com/ FIE05081)

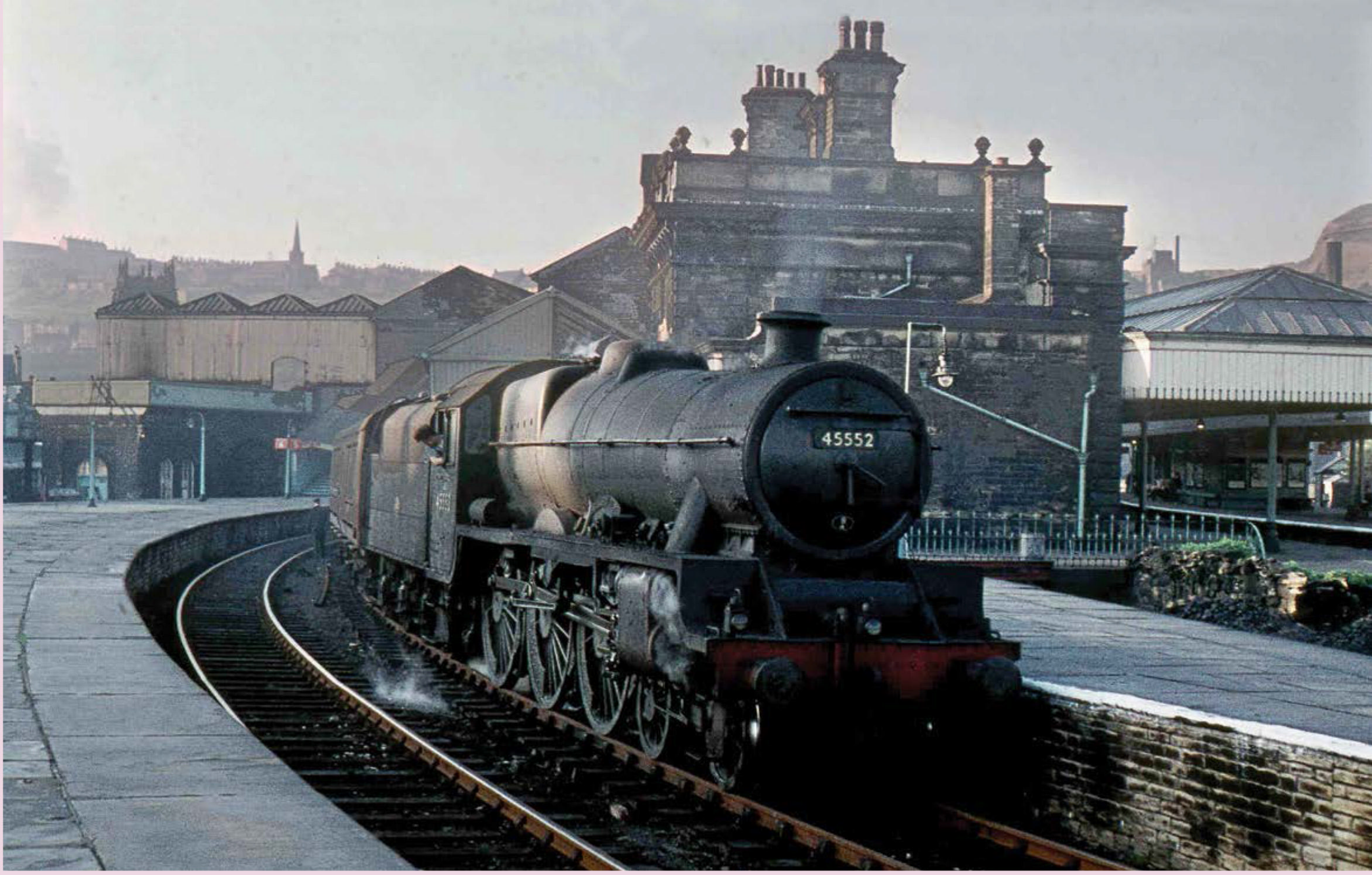




ABOVE: **In addition to its drive for modernity, in the early sixties the CIE still played host to some Victorian gems. Thus it was at Ballahagdereen, Co. Roscommon, on 8th June 1961 as the branch line mixed train arrived from Kilfree Junction on the former Midland Great Western Railway 'principal' line from Dublin via Mullingar to Sligo. At the head of the train was 2-4-0 No.655, formerly named *Clonsilla,* built at the Broadstone (Dublin) Works of the MGWR in 1897 and due for withdrawal by the end of the year.**
(Colour-Rail.com/ FIE05113)

BELOW: **The rear view of this train reveals the arrival of the 'Swinging Sixties' in Ballahagdereen with the delivery of a brand-new shiny red Mini. Spick and span though it is, the station seems deserted – although the passenger accommodation on offer in the train seems to anticipate a rush for first class seats!**
(Colour-Rail.com/ FIE05114)





Halifax Old was renamed Halifax Town in September 1951, a decade before LMS 'Jubilee' Class 4-6-0 No.45552 *Silver Jubilee* paused on an up express in May 1960. This was supposedly the first of the 'Jubilees', though was actually No.5642 following an identity swap for the ceremonial naming in 1935. (Gavin Morrison)

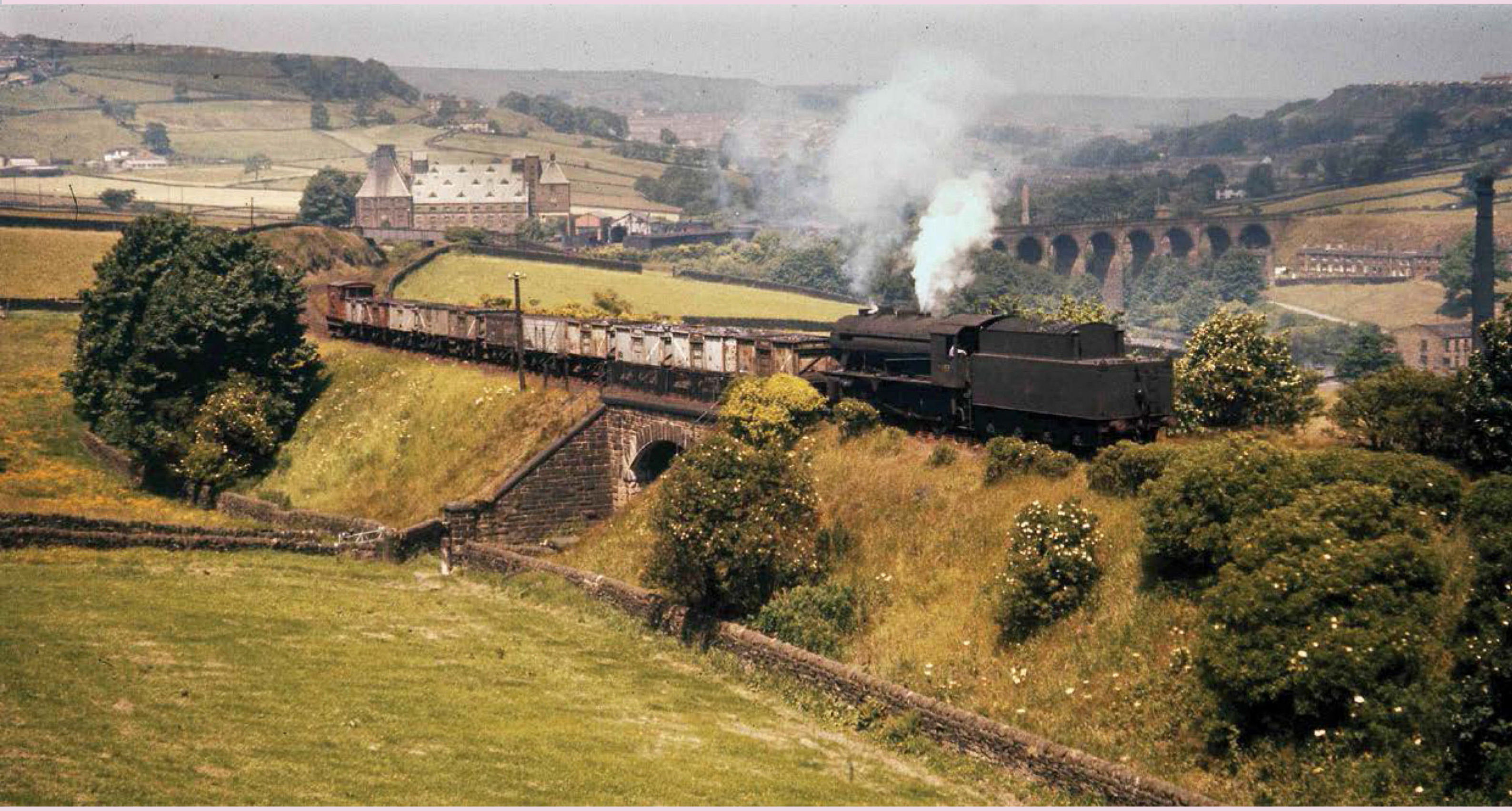
THE RAILWAYS OF

BY DAVID JOY

Grievances in two towns on opposite sides of Calderdale were reaching new heights in early 1844. Both Halifax and Huddersfield felt deeply dismayed that they had been bypassed by the Manchester & Leeds Railway, completed on 1st March 1841, which stuck to the valley floor in order to adhere to George Stephenson's policy of minimum gradients. There was a consensus that the root of the problem was a company based in Lancashire and thus showing little concern for 'God's Own County' of Yorkshire

At first and against the odds, Halifax seemed to be faring better. Its position in the narrow and steep-sided tributary valley of Hebble Brook, which for centuries had provided water power for early mills, did not lend itself to railway construction. The Manchester & Leeds nevertheless promised to build a branch from a junction at North Dean to a terminus in the bottom of the town at Shaw Syke. An Act of 1st July 1839 included a clause of dubious value that the line should be built 'as soon as possible'. Characteristically, the company was

Construction of Copley Viaduct was a factor in delaying opening until January 1852 of the cut-off from Sowerby Bridge to Halifax, thus creating a direct route into the town from Manchester. The 21 arches are being crossed by a DMU in August 1994. (Gavin Morrison)



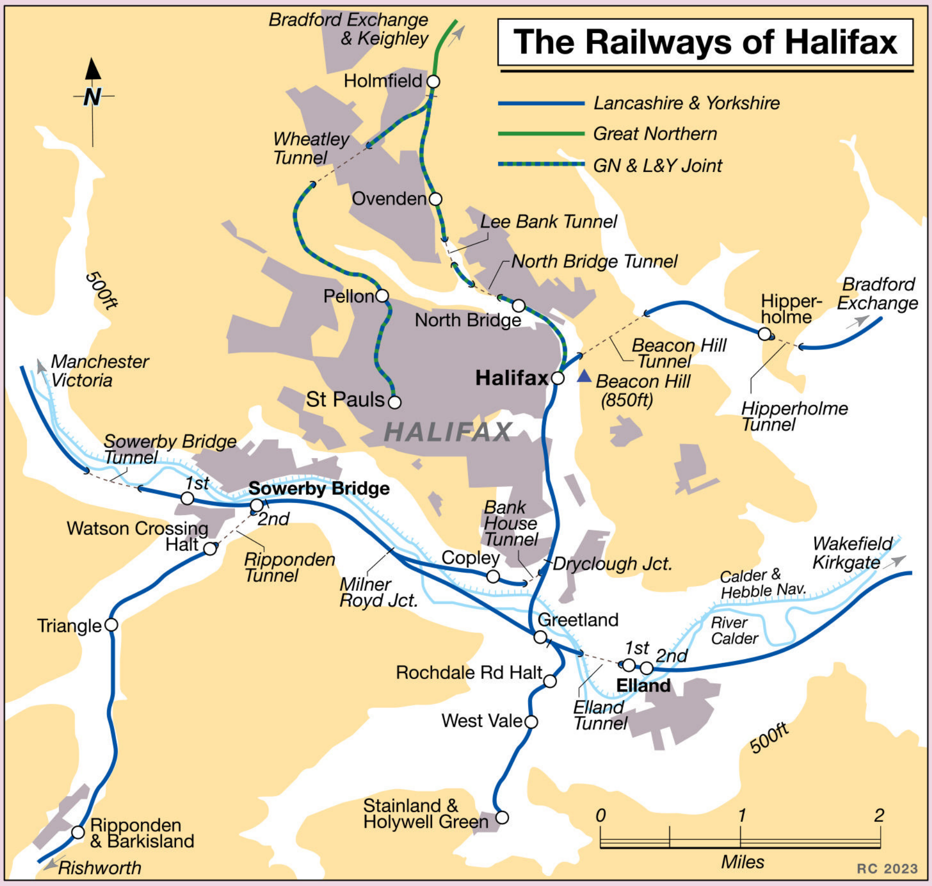
Photographs of the Halifax High Level Railway are few and far between, partly because passenger services were withdrawn as early as January 1917. Its heavy engineering features included the ten-arch Wheatley Viaduct, seen in the background as WD 2-8-0 No.90113 takes a goods train up the 1 in 50 climb to Pellon in June 1959. Total closure took place a year later on 27th July 1960. (Gavin Morrison)

HALIFAX

not swayed and took five years to complete its total length of a mere 1¾ miles.

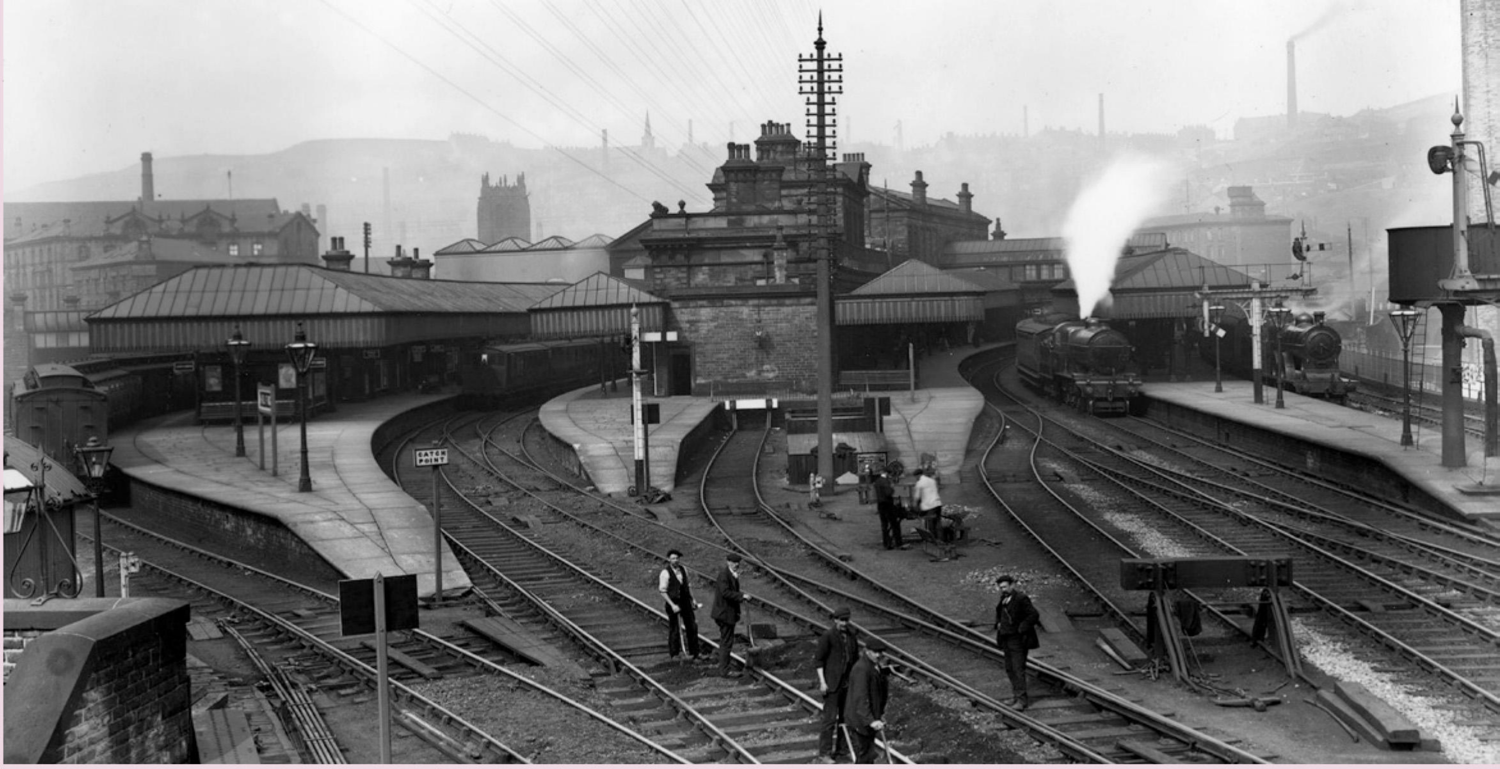
Opening on 1st July 1844 seemed only to heighten the grievances. Much of the single line was on a gradient of 1 in 44 and many drivers had to get a run at the bank by setting back on to the main line through a tunnel towards Elland, the nearest station to the junction. There was intense discontent over poor connections to Manchester, now seen as vitally important with the town diversifying into cotton manufacture after centuries of dependence on wool. Perversely the only redeeming feature was that Huddersfield was in a worse position. It still had no railway.

Belatedly the Manchester company proposed to build a branch from Cooper Bridge to Huddersfield, which in a similar way to Halifax would terminate in the lower part of the town. It would prevent any possible competing extension westwards to Manchester and such was the protest at a stormy public meeting in January 1844 that the proposal was abandoned. Halifax interests must have rubbed their hands and thought they would remain in a premier position. There were in for a nasty shock.


The Railways of Halifax
Lancashire & Yorkshire
Great Northern
GN & L&Y Joint
N
Bradford Exchange & Keighley
Holmfield
Wheatley Tunnel
Ovenden
Lee Bank Tunnel
North Bridge Tunnel
Pellon
North Bridge
Hipper-holme
Bradford Exchange
Beacon Hill Tunnel
Beacon Hill (850ft)
Halifax
St Pauls
HALIFAX
Hipperholme Tunnel
500ft
Manchester Victoria
Sowerby Bridge Tunnel
1st
Sowerby Bridge
2nd
Watson Crossing Halt
Ripponden Tunnel
Milner Royd Jct.
Copley
Bank House Tunnel
Dryclough Jct.
Wakefield Kirkgate
Calder & Hebble Nav.
River Calder
Triangle
Greetland
1st
2nd
Rochdale Rd Halt
Elland
West Vale
Elland Tunnel
500ft
Stainland & Holywell Green
0
1
2
Miles
Ripponden & Barkisland
Rishworth
RC 2023

Huddersfield was in many respects a feudal fiefdom like no other. As related in my article in the January 2022 *Backtrack,* the Ramsden family claimed to own the whole town except for one house. Presiding over its destiny were the Honourable Lady Isabella Ramsden and her brother-in-law, the 5th Earl Fitzwilliam, one of the wealthiest men in England. Collectively they realised that decisive steps had to be taken if Huddersfield were to meet the challenges posed by the coming 'Railway Mania'. Their carefully chosen agent was George Loch, a trained lawyer with an outstanding reputation in upper echelons of the aristocracy.

On taking up his appointment in July 1844, the same month as opening of the Halifax branch, Loch was faced with a cascade of competing schemes all seeking Ramsden land. Using his adversarial skills, coupled with the 5th Earl's presence in the Lords, he was able to secure Parliamentary approval in 1845 for a direct main line from Leeds via Dewsbury to Huddersfield and on through Standedge Tunnel to Manchester.



Halifax station on 30th August 1912 with the original buildings of 1855 in the centre. The Great Northern platforms are on their left and those of the Lancashire & Yorkshire to the right, here graced by a 'Dreadnought' 4-6-0 and a 'High Flyer' 4-4-2. Halifax was then infamous for its perpetual canopy of smoke, but some of its many mill chimneys are faintly visible in the distance. (Pendragon Collection)

Loch was also able to oppose a line backed by the Manchester & Leeds from Bradford through Halifax to Huddersfield, where the town was still smarting from the way the company had long treated it with disdain. He described the scheme as 'wild and insolent' and must have played a key role in having it thrown out. By the end of 1845 there had been a reversal of fortunes. Huddersfield would be in a prime position on an east-west route through the Pennines and Halifax was left at the end of a branch line. Even though the junction at North Dean gained its own station, first shown in *Bradshaw* in February 1846, it did little to help.

Halifax had been sidelined for a vital year and was never able to regain the lost ground. Hope seemed to return on 18th August 1846 following incorporation of the West Riding Union Railways to build a network of routes. These included a main line from Sowerby Bridge on the Manchester & Leeds through Halifax to Low Moor and then forking at Bowling to the wool capital of Bradford and eastwards to Leeds – the West Riding's most important town.

Parliament insisted that within three months the company should amalgamate with the Manchester & Leeds, which in July 1847 broadened its ambitions by becoming the Lancashire & Yorkshire Railway. Neither change found favour east of the Pennines, where county rivalry continued unabated. The Lancashire concern became known as "the most degenerate railway in the kingdom" with a shocking reputation for both tardy construction and poor train services.

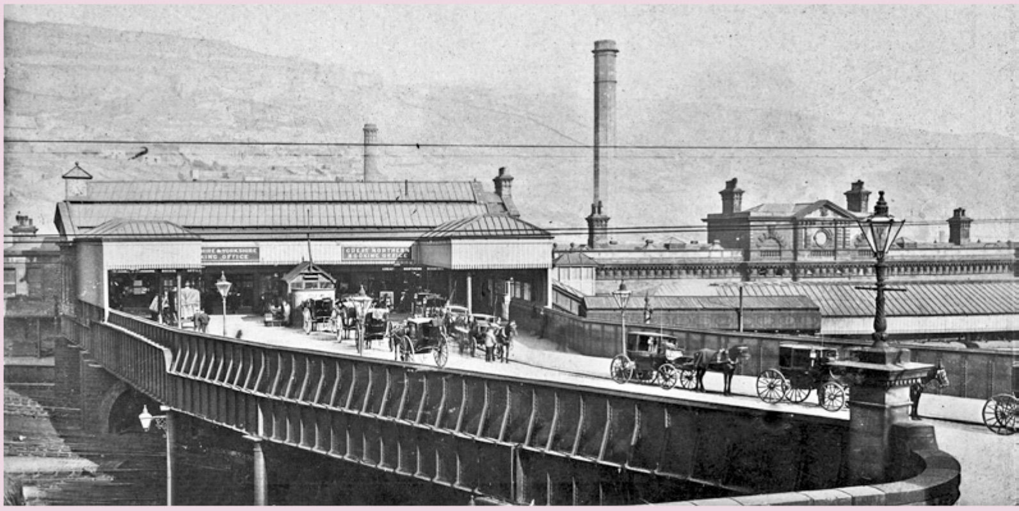
Little progress had been made with the West Riding Union lines in July 1849 when the London & North Western completed the trans-Pennine main line determinedly seen through by George Loch. It meant that passengers from Huddersfield to Manchester had a relatively fast 26-mile journey, whereas from Halifax it was a slow 33 miles and involved a change of train at North Dean. Moreover, the facilities at Huddersfield were blessed with what John Betjeman much later described as "the most splendid station façade in Europe". At Halifax there was just a temporary terminus where third class passengers could find themselves having to travel in open wagons with no seats or shelter.

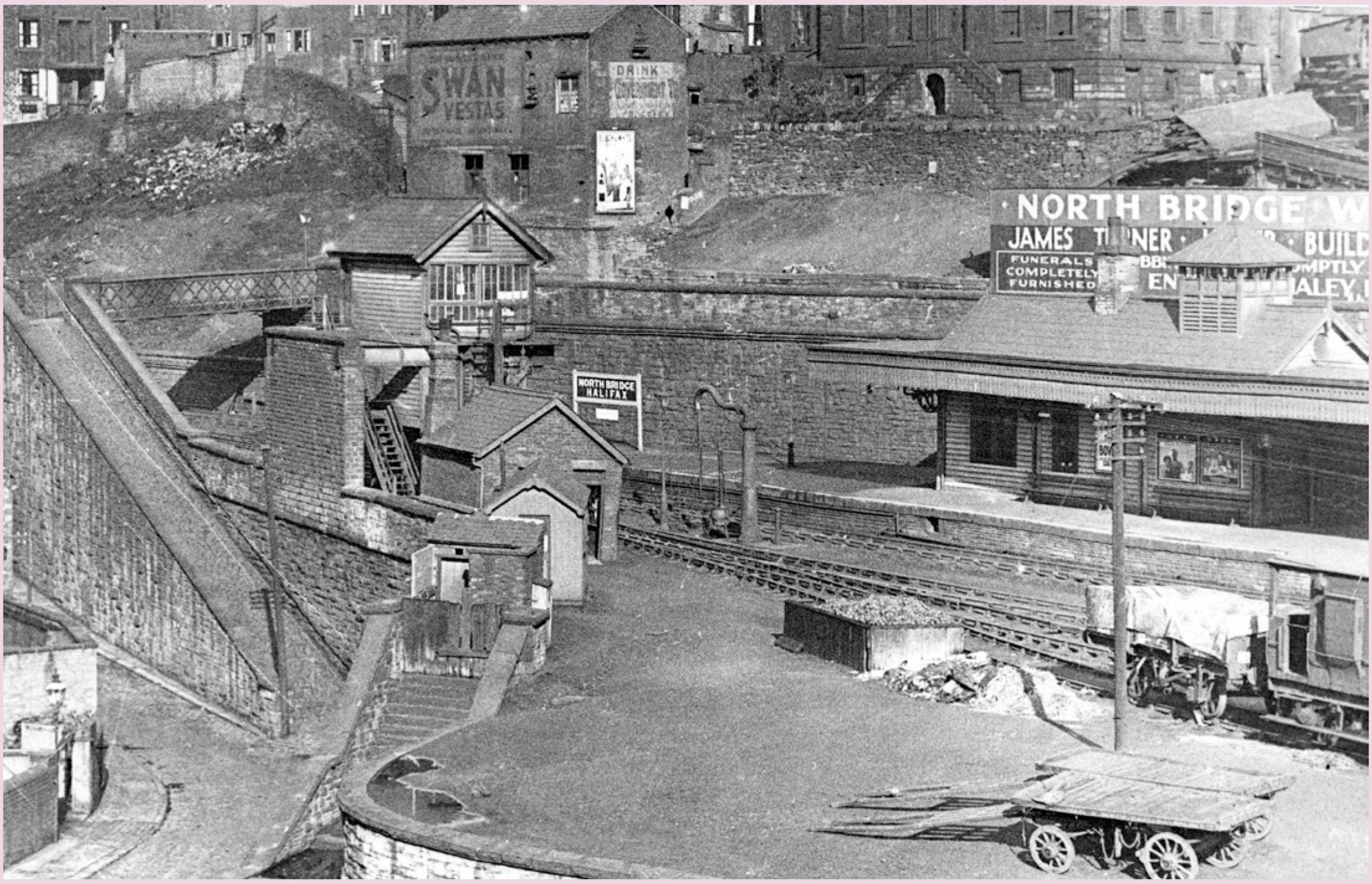
The Lancashire & Yorkshire was so impoverished after collapse of the 'Railway Mania' that progress on the West Riding Union line from Halifax to Bradford remained extremely tardy. It was not helped by major engineering works. The constricted nature of the Hebble Valley meant that the line left the town on a ten-arch viaduct built by Sir John Hawkshaw, the company's chief civil engineer. It then immediately swung into the 1,105yd Beacon Hill Tunnel, complete with Gothic portal, before entering Shibden Dale and continuing north across the grain of the Aire and Calder watershed. There was a further 1,365yd tunnel at Wyke and then the longer 1,648yd bore at Bowling, which required the sinking of fifteen vertical shafts and use of six steam winding engines.

Opening finally took place on 7th August 1850 of the 5¼ miles from Halifax to Low Moor, the remaining three miles into Bradford having carried its first passengers three months earlier on 9th May. Close to Halifax there were intermediate stations at Hipperholme and Lightcliffe. It was a major step forward but did little to soothe constant criticism. Although the temporary terminus at Shaw Syke was closed and became a goods depot, the replacement through station a quarter of a mile to the north was also 'temporary' and its wooden construction did nothing to enhance the town. Like its predecessor, it was inconveniently sited for a settlement expanding away from the station up the hillside to the west.

Money became ever tighter, delaying construction of a spur from Milner Royd Junction, east of Sowerby Bridge, to Dryclough Junction on the original Manchester & Leeds branch, and doubling of the earlier line through difficult rock cuttings north of this point. Loose

A busy scene in pre-motoring days at the high-level passenger entrance to Halifax station. Separate booking offices for Lancashire & Yorkshire and Great Northern trains are clearly signed. Extensions completed in 1886 left only the top of the original buildings visible at right. (John Alsop Collection)

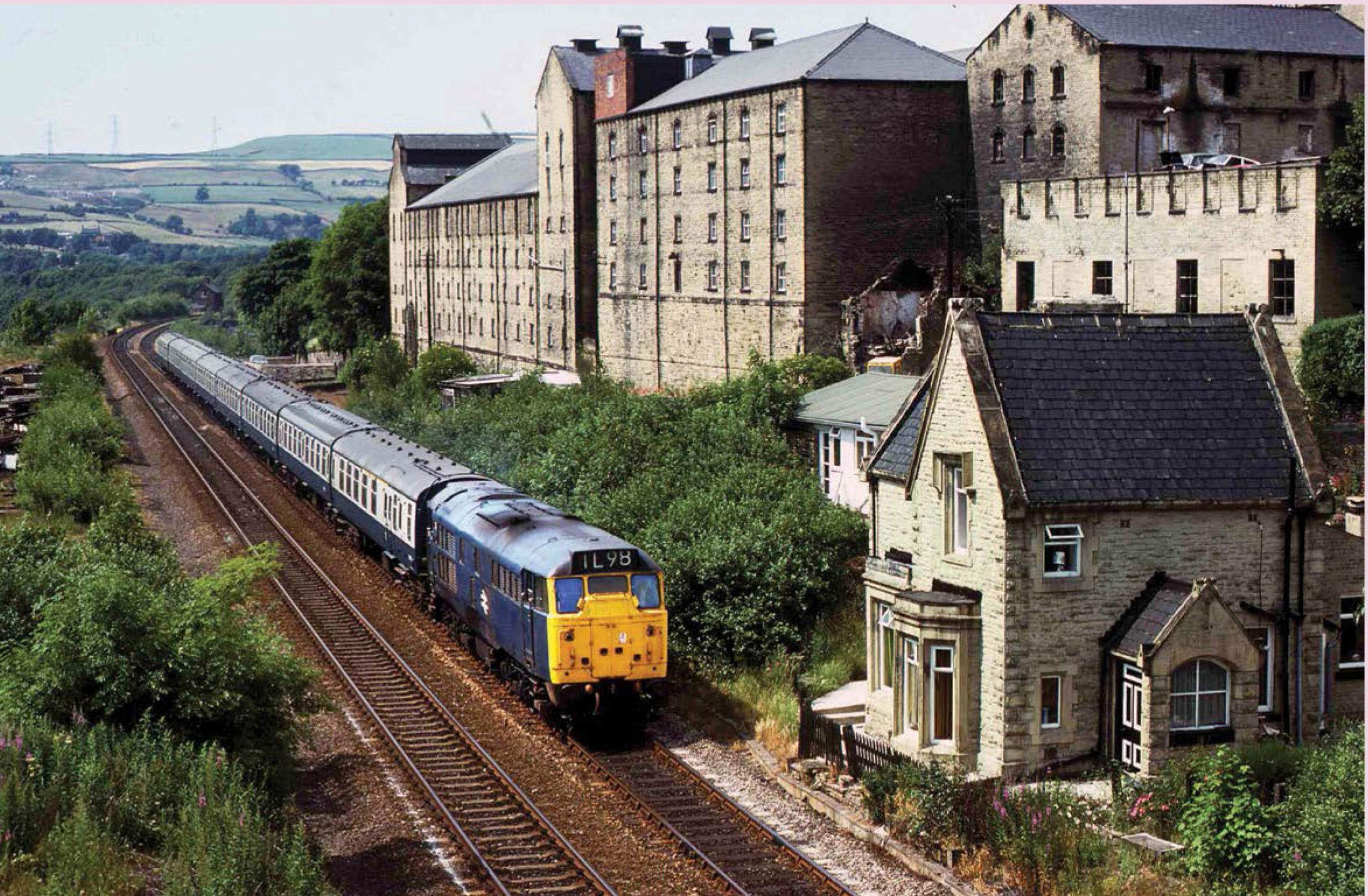


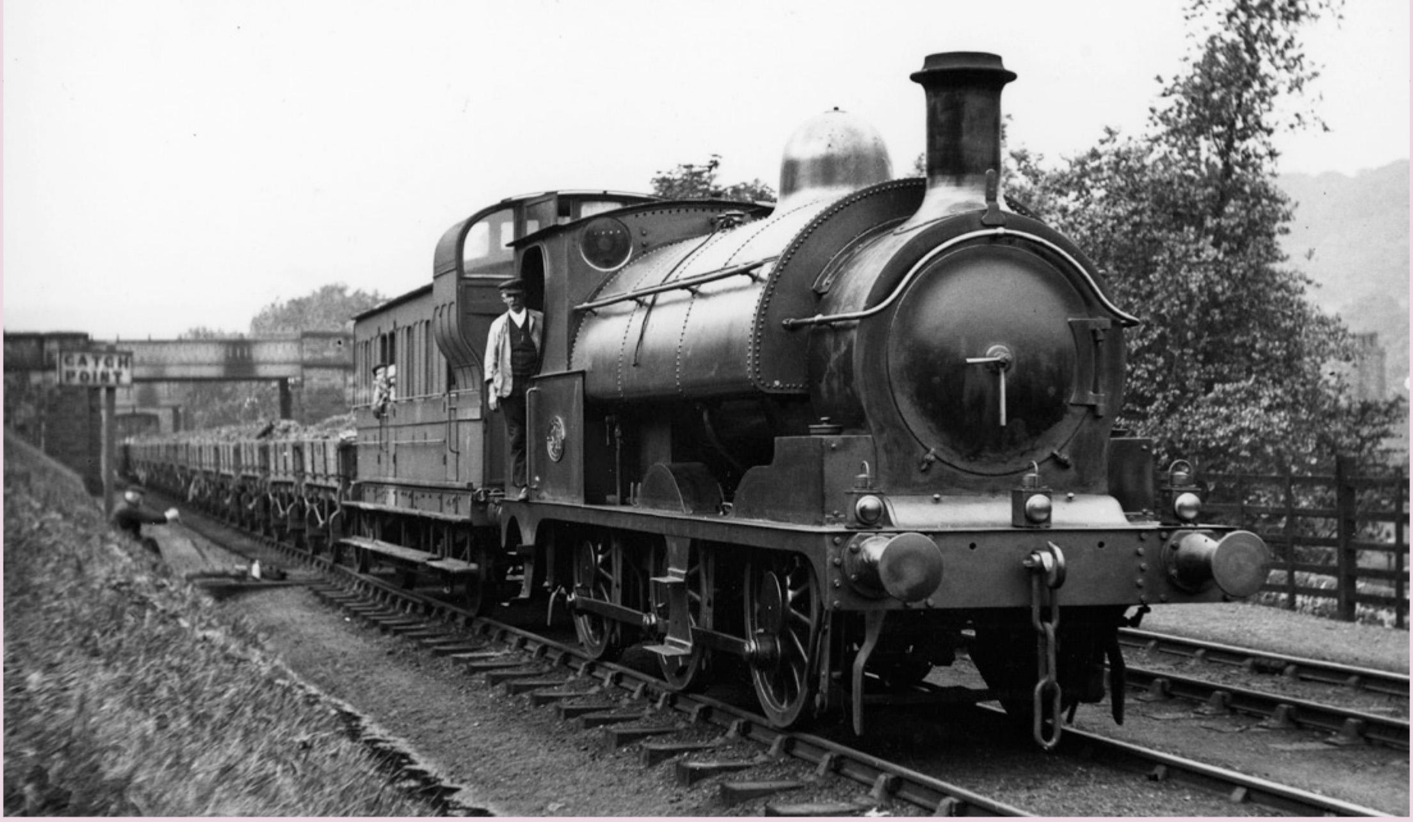


Cramped surroundings personified at North Bridge station on the Halifax & Ovenden Junction Railway, jointly owned by the LYR and GNR companies. The four-wheeled carts, general down-at-heel appearance and the sign advertising 'funerals completely furnished' all contribute to the period flavour. (*Halifax Courier*)

A typical West Riding setting as Class 31 No.31 298 heads a Saturday service from Bridlington to Bradford Interchange through Lightcliffe in July 1975. The remnants of the once attractive station, closed in June 1965, have since been demolished. (Gavin Morrison)

rock meant a tunnel had to be substituted for a planned cutting, while a further factor that delayed opening until 1st January 1852 was the 66ft high 21-arch viaduct over the River Calder. Making its first appearance in *Bradshaw* in November 1855 was an intermediate station at Copley to serve a new and utopian factory village. A forerunner of the more famous Saltaire, it was created by Colonel Edward





A ballast train at Watson's Crossing Halt on the Sowerby Bridge to Rishworth branch in 1911. The reasons why two young children are in the carriage remain unknown. The halt comprised little more than bare boards at track level, seen on the right of 0-6-0ST No.541 of 1877, rebuilt by Barton Wright in 1892 from a tender engine. (Alan Tyson Collection)

Akroyd, founder of the Yorkshire Penny Bank. A related development was doubling of the original single track branch from North Dean to Dryclough Junction in 1869.

Enter the Great Northern

Relations between Halifax and the Lancashire & Yorkshire nosedived soon after the 'Railway Mania' had run it course. In 1850 the company announced that it was unable to finance any further West Riding Union Railways. These included a line to Huddersfield, which was never revived. Ironically, it meant that the two towns once complaining so vociferously about railway neglect never had a direct link between them.

More serious was abandonment of the main line east from Bowling, thus depriving the company of getting its own access into Leeds. It was an opportunity that never recurred. Although finance was the root cause, another factor would be opposition from the formidable Captain Mark Huish of the London & North Western Railway. He had a strong influence over the Lancashire & Yorkshire and would not want a competitive route from Manchester to Leeds.

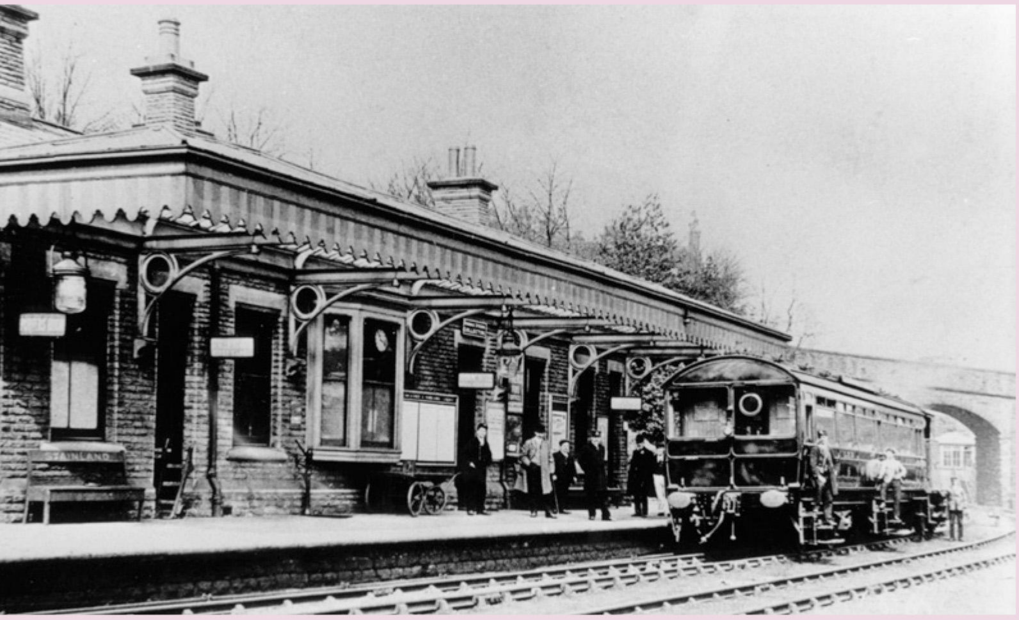
Fury in Halifax knew no bounds. The town now played a key role in formation of the Leeds, Bradford & Halifax Junction Railway, which effectively took over the West Riding Union powers. It was incorporated on 30th June 1852, despite the Lancashire & Yorkshire having the gall to oppose a line that it had discarded. Backing the new enterprise was the Great Northern Railway, eager to expand further into the West Riding. Following opening on 1st August 1854, it was responsible for operations and had running powers into Halifax. These were in return for giving the Lancashire company reciprocal powers into Leeds and agreeing that it would work most through passenger services.

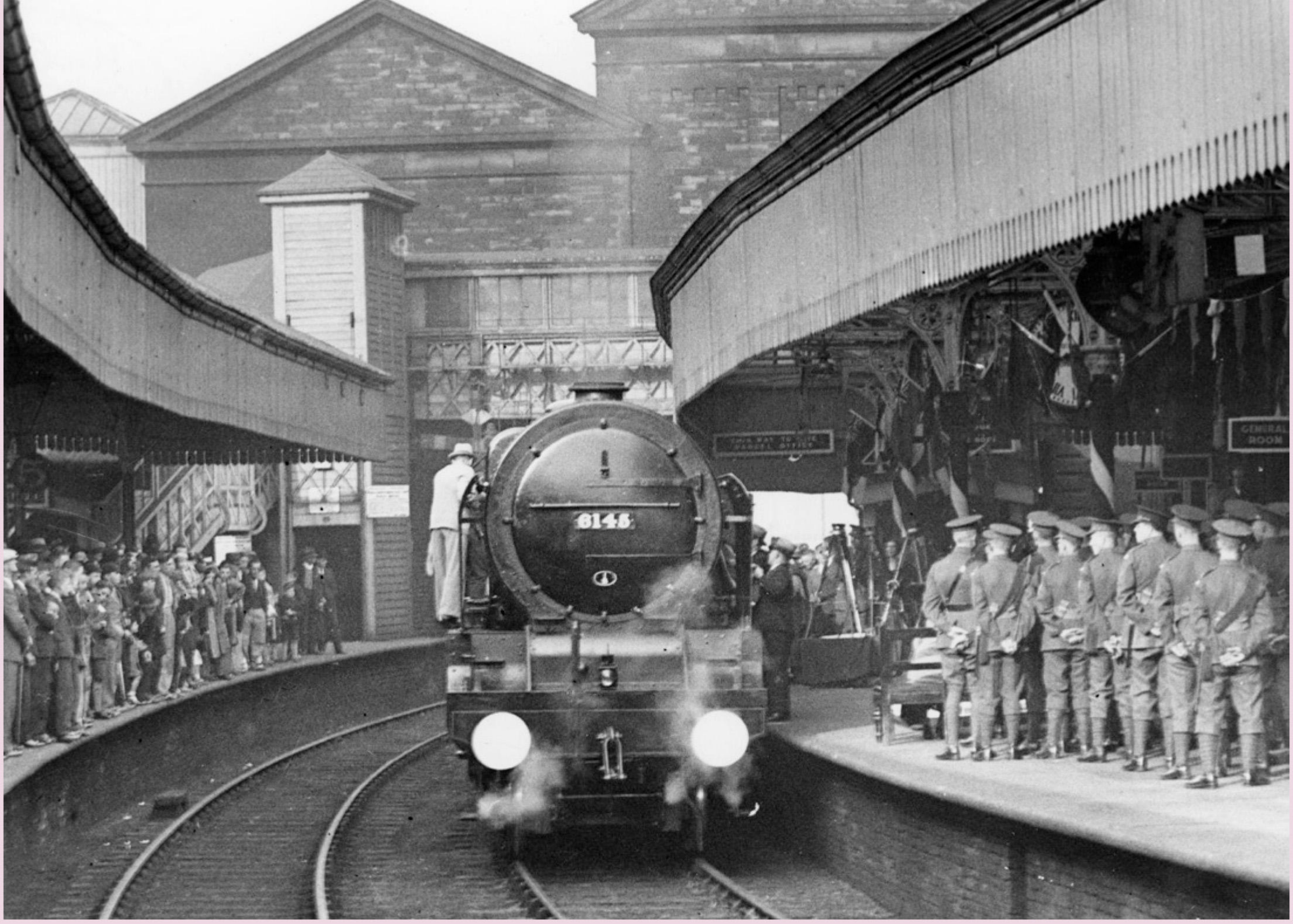
Additional traffic led to the opening on 24th June 1855 of a permanent through station at Halifax. Designed in Palladian style by Thomas Butterworth of Manchester, it boasted a central portico and two wings giving a combined frontage of 236ft. It did not come a moment too soon for the *Courier* newspaper, which rejoiced at the passing of its "miserable, dirty and disagreeable" predecessor. It had no hesitation in claiming: "We are sure there is not a town from Caithness to Cornwall which could exhibit a more filthy doghole of a place than that in which all the railway traffic of Halifax has so long been transacted." The Great Northern provided its own goods depot at Halifax South Parade from 1st September 1856.

By now there was uncontrolled growth in the number of steam-powered mills alongside railways entering the town, which in its tight confines became grossly polluted. Squalid rows of back-to-back houses with no proper sanitation were deprived of light and air by countless factory chimneys belching forth smoke day and night. Charles Dickens, making one of his lecture tours in 1858, famously proclaimed that Halifax was "as horrible place as I ever saw". His view was accepted by the sanitary inspector J. R. Smith who summarised the settlement as "a veritable muck-midden". T. J. Masden, who offered advice on improvement to a number of northern towns, went into more detail and referred to "a mass of little, miserable, narrow, ill-looking streets, jumbled together in chaotic confusion, as if they had all been in a sack and emptied out together upon the ground". Average life expectancy by mid-century was down to under 27 years.

Such conditions did not prevent lavish expenditure on a new Town Hall, opened with great ceremony by the Prince of Wales on 4th August 1863 when the station somehow

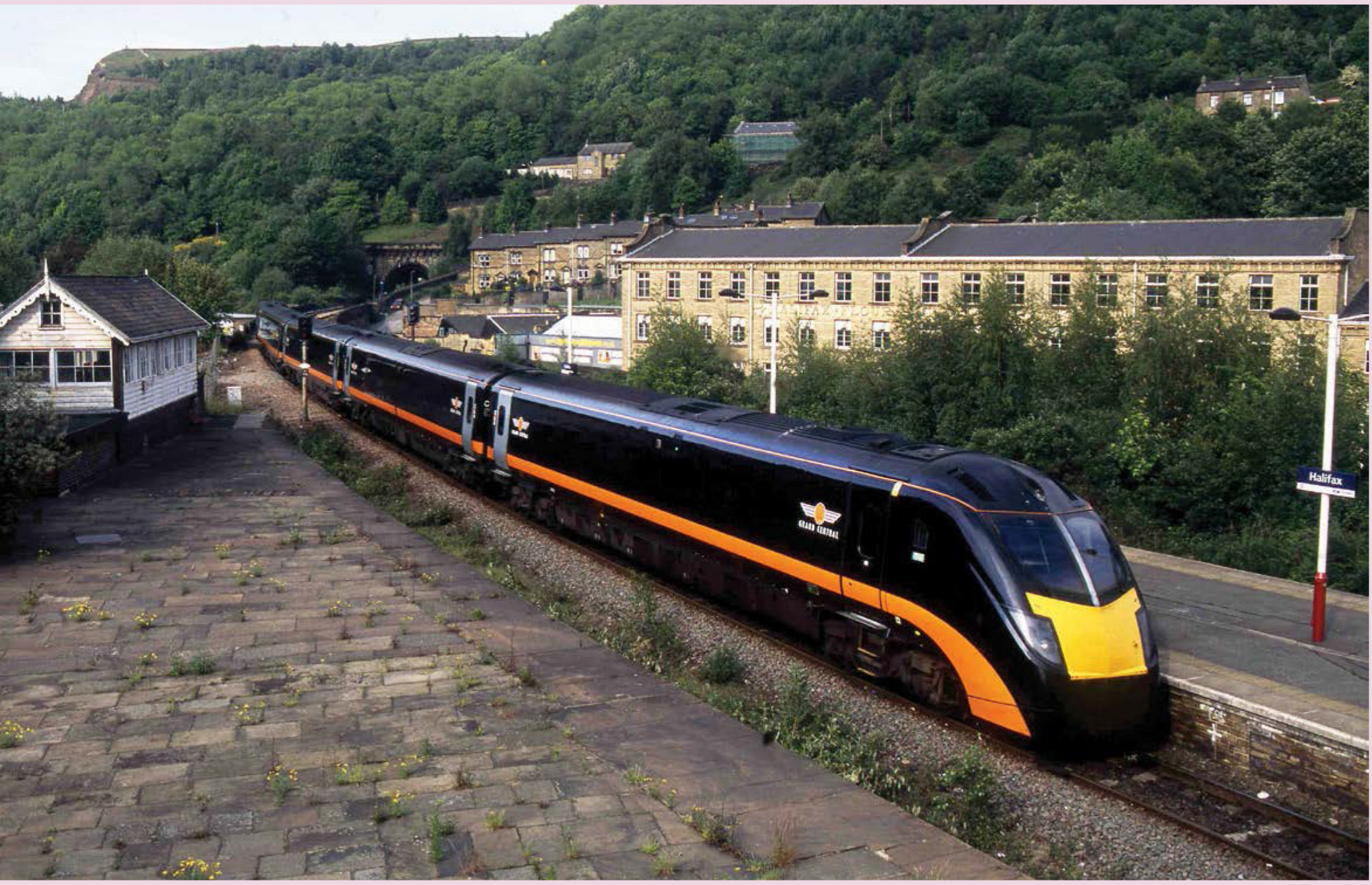
Railmotor at Stainland & Holywell Green, terminus of the 1½-mile branch from Greetland closed to passengers as early as 1929. (Pendragon Collection)





ABOVE: **Pomp and circumstance military-style at Halifax on 4th October 1936 with LMS 'Royal Scot' 4-6-0 No.6145 as the centrepiece. It is being renamed, losing the prosaic *Condor* and becoming *The Duke of Wellington's Regt. (West Riding)*.** (*Halifax Courier*)

BELOW: **Rail facilities at Halifax have been reduced to little more than a single island platform, but they are now host to Grand Central services from Bradford Interchange to King's Cross which have transformed the town's links with the capital. Two weeks after their introduction, a down service is about to enter Beacon Hill Tunnel on 6th June 2010. The precipitous slopes on the east side of the station are all too evident.** (Gavin Morrison)



managed to handle 164 special trains. A reporter from *The Times* noted sardonically that Halifax was "deficient, as a general rule, in what Londoners would call streets".

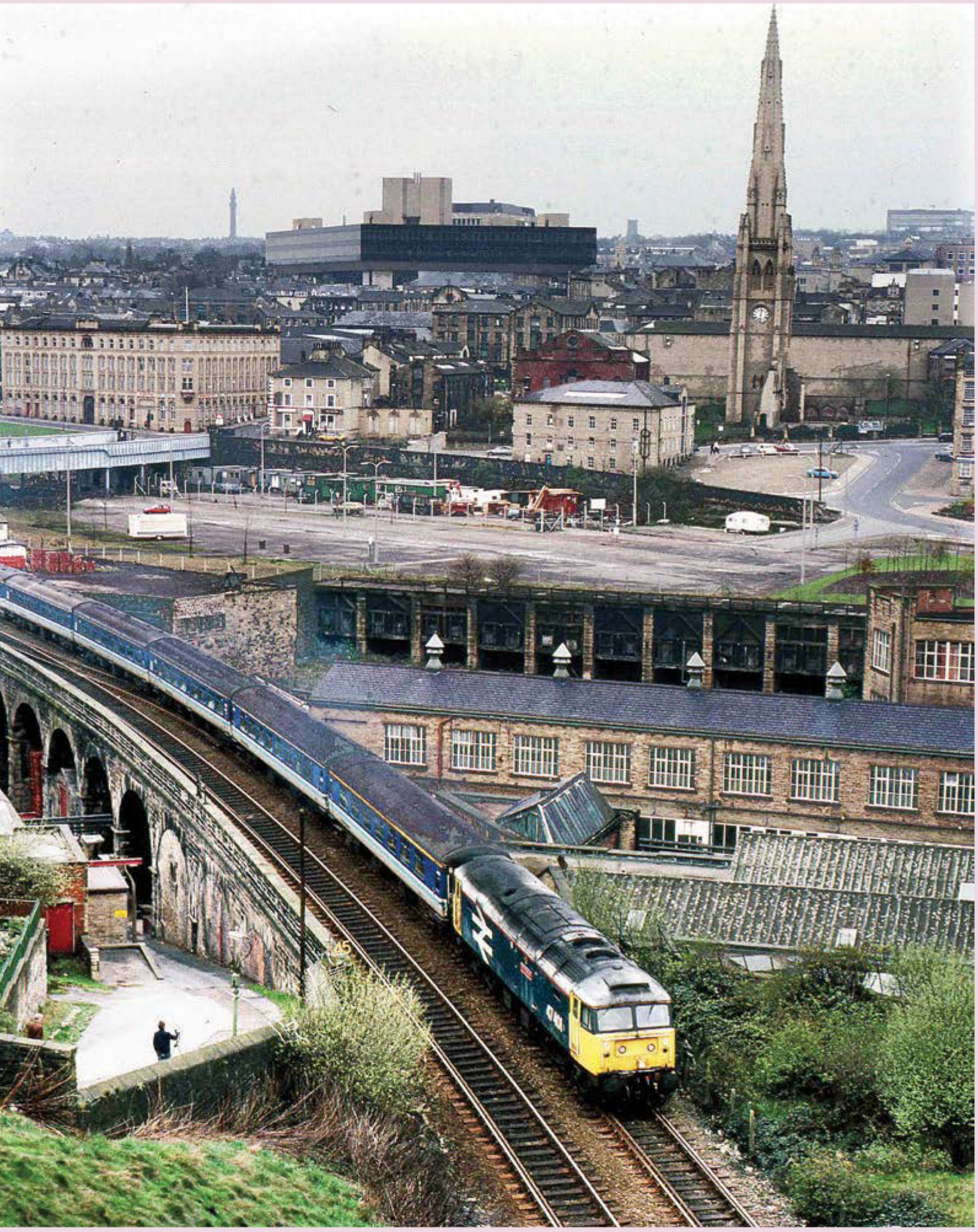
The town's population was soaring to reach 37,014 in 1861 and then boosted by boundary extensions to 65,510 ten years later. Crossley's Dean Clough Mills, alongside Hebble Brook, had a 5,000 payroll by 1871 and were becoming famed as "the largest carpet factory in the world".

John Crossley was anxious to secure rail facilities alongside his mills and became a leading promoter of the 2¾-mile Halifax & Ovenden Junction Railway, incorporated on 30th June 1864. It was supported by the Lancashire & Yorkshire, expecting substantial traffic from Dean Clough and dye works in the valley, and the Great Northern which saw it as the first stage of an independent route from Halifax to Bradford.

Lack of capital by both parties delayed progress until the line was vested jointly in both concerns in 1870. A further delay was caused by a massive landslip at Wade Street, Halifax, and it was 17th August 1874 before goods traffic began over the first mile on a 35-arch viaduct to reach North Bridge. Here there were extensive freight facilities with both companies fiercely competing to secure custom. Each offered its own collection and delivery horse-drawn cartage service and had its own stables with full-time farriers.

Despite the line's name, Ovenden was not the terminus and from 1st September freight was passing through here to reach Holmfield. There was then a lengthy pause owing to the deepening recession and massive engineering challenges that had to be faced by the Great Northern. North of Holmfield water-bearing strata in the 1,000yd-long and 60ft deep Strines cutting posed even greater difficulties than the 1 mile 741yd Queensbury Tunnel – the company's longest at the time of completion.

Halifax in the 1980s, showing only too clearly the problems posed by the cramped location of the town. Dominating the scene are the spire of All Souls' Church and the futuristic offices of the Halifax Building Society, but otherwise it is a dreadful muddle. Class 47 No.47 401 is heading a diverted Liverpool to Newcastle express in April 1988. (Gavin Morrison)



Great Northern passenger services from Halifax finally began as far as Holmfield on 5th December 1879 and ten days later were extended to the unique triangular station at Queensbury, where they either continued to Bradford or after 1884 to Keighley. Passenger stations were opened at North Bridge on 25th March 1880 and at Ovenden on 2nd June 1881. This first part of the line out of Halifax was on an almost continuous gradient of 1 in 45 and understandably was christened the 'Alpine route' by generations of struggling drivers and firemen. Their problems were not over once they got to Holmfield, as almost half the mileage on to Bradford was in tunnel.

The increase in freight resulting from the new line led to the Great Northern opening a new warehouse at South Parade in 1885 – it survives as a Grade II listed building. The scale of traffic was also indicated by a series of fifteen coal drops installed near Halifax station, each one provided with a geared pulley system worked by iron ratchets to speed operations.

Lancashire & Yorkshire branches

Continued growth of Halifax was hampered by the cliff-like nature of the Hebble Valley on the east side of the town. There were limits as to how far it could spread westwards and attention began to turn to expansion of nearby settlements on the southern flanks of Calderdale. The Lancashire & Yorkshire obtained powers on 5th July 1865 for two branches from its Calder Valley main line, but both took an inordinately long time to build owing to the years of recession. The first diverged from a junction at North Dean station (renamed Greetland in January 1887). Although only 1½ miles in length, it was not opened until 1st January 1875. There was an intermediate station at West Vale, close to a thirteen-arch viaduct over the Black Brook valley. The branch then continued to a terminus at Holywell Green, originally named Stainland even though this village was almost a mile distant in a hill-top location. Not until 15th March 1892 was a compromise reached and it was renamed Stainland & Holywell Green. Train services based on Halifax settled down to five each way with an additional Saturday night working for villagers wanting a late evening in the town.

Like many Lancashire & Yorkshire extremities the Stainland branch verged on the extravagant with the use of double track. The same applied to a 3¾-mile branch from Sowerby Bridge to Rishworth, although here there were special circumstances as it was seen as the first stage in an ambitious cut-off tunnelling under Blackstone Edge to eliminate the kink in the Calder Valley main line through Todmorden and Hebden Bridge. An impressive new station at Sowerby Bridge was opened on 1st September 1876 but massive problems had already arisen in the Ryburn Valley which was even narrower than that of the Hebble at Halifax. Seriously unstable land meant it was 5th August 1878 before the first passenger train pulled into a station at Ripponden to the accompaniment of church bells ringing and large cannon firing.

Over two years elapsed before a short extension of less than a mile to Rishworth was opened on 1st March 1881. Linked to the tiny village by a lofty timber viaduct, it seemed symbolic of changing fortunes when the faltering Victorian economy caused abandonment of the grand plan for a cut-off. An intermediate station at Triangle was opened on 1st June 1885. It preceded what became Ripponden & Barkisland on 1st December 1891, the suffix coming from another of the many hill-top villages characteristic of this part of Calderdale. It remains questionable how many of its occupants took the steep descent of 300ft down narrow roads to catch a train to Sowerby Bridge and a connecting service to Halifax. The return trip would be even more arduous!

High ambitions

By the 1880s it was obvious that the existing Halifax station had become inadequate and it was rebuilt in two stages, the first opening on 25th October 1885 and the second on 30th May 1886, to provide a total of seven platforms. The west side of the new buildings was allocated to the Great Northern and the east to the Lancashire & Yorkshire with the two companies having separate booking offices. The station became known as Halifax Old from 1890. The 'Old' was added partly to avoid continuing confusion with North Bridge and more particularly because a new station was opened at St. Paul's, only 1¼ miles to the west but 325ft higher in altitude.

Halifax had by this time extended in every possible way up the western slopes of the Hebble Valley, but it meant 80,000 tons of coal were annually being dragged up steep roads to supply some 130 mills. It was a key factor in incorporation on 7th August 1884 of the Halifax High Level & North & South Junction Railway. This wordy title reflected a rosy-eyed ambition of its promoters to create a vital link in a new route for Midland Anglo-Scottish expresses, using a projected extension of the Hull & Barnsley Railway through Huddersfield to reach a high-level and more central station in George Street, Halifax, and then continue over the Great Northern via Queensbury to Keighley.

When this dream collapsed the works were limited to a three-mile branch from Holmfield to St. Paul's, its expensive engineering works including an 819yd tunnel through solid rock and the ten-arch Wheatley Viaduct. Gradients were as steep as a short stretch of 1 in 35 at Holmfield and a longer climb at 1 in 50. Opening took place on 5th September 1890 with an intermediate station at Pellon, primarily catering for large amounts of freight traffic. This was mainly handled by the Lancashire & Yorkshire with the Great Northern normally operating all passenger services, the line being jointly worked by the two companies until it was vested in them in 1894.

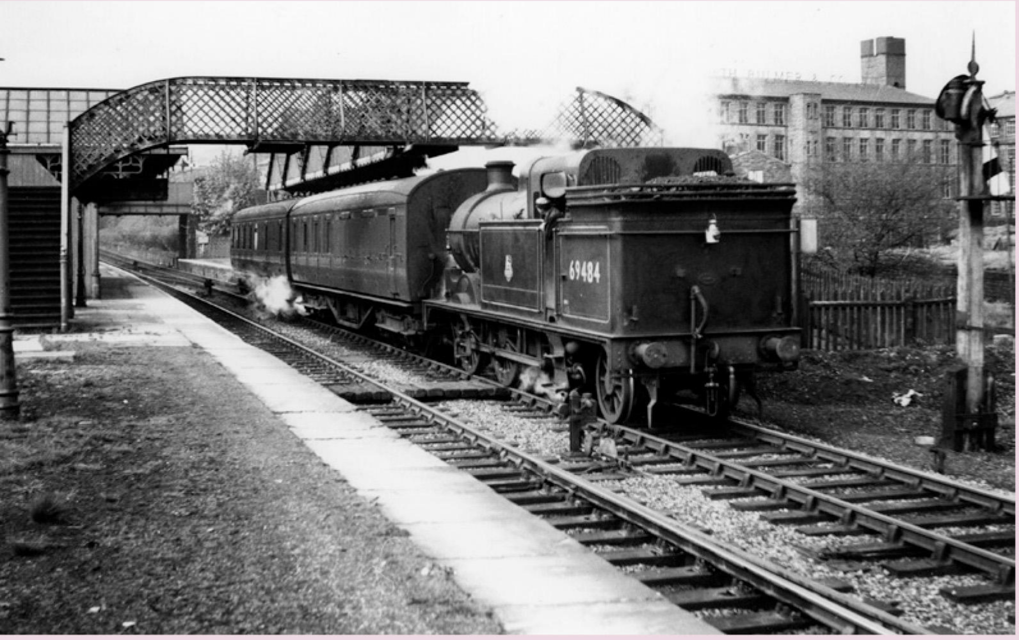
Years of change

The Midland did not immediately abandon its ambition to serve Halifax and sanction for its own terminus reached by running powers over the Lancashire & Yorkshire was obtained in 1899. Although it soon proved too late for such schemes, the town continued to expand and its population peaked at almost 105,000 in 1901. It also remained as unlovely as ever. Writing in 1912, the Yorkshire author J. S. Fletcher referred to the "great canopy of dun-coloured smoke which seemed to hang night and day above the grey old town".

With little level land and hills in every direction the Halifax area was especially susceptible to tramcar competition. It drove the Lancashire & Yorkshire to introduce steam railmotors on both its Stainland and Rishworth branches on 1st March 1907. They were fitted with steps to serve rail-level halts, respectively provided at Rochdale Road and Watson's Crossing. Like many later diesel multiple unit services, they merely staved off the inevitable. Trams were extended from West Vale to Stainland in 1921 and the branch termini were in direct competition with bus services by 1927. Passenger traffic on both branches managed to survive for only another two years with services to Rishworth ending on 8th July 1929 followed by those to Stainland on 23rd September.

The Halifax High Level line proved especially vulnerable, as a journey from St. Paul's to say Sowerby Bridge, little more than a mile away, involved two changes of train and took at least 35 minutes. Passenger services, which from the outset had brought in disappointingly low receipts, ceased on 1st January 1917 after a life of only 27 years, although St. Paul's was retained for excursion traffic until well in to the 1950s. Recognition of future trends was clearly evident in 1929 when the Halifax Joint Omnibus Committee was formed by the LMS and LNER in collaboration with the Corporation. It was a factor in the closure of Copley station to passengers on 20th July 1931,.

GNR N1 0-6-2T No.69484 leaving Holmfield on 23rd May 1955 – the last day of passenger services on the Queensbury lines. It was clearly an event that passed with no undue ceremony. (J. C. W. Halliday)



The depression years of the 1930s proved hard for Halifax with its high unemployment. J. B. Priestley visited the town when writing his classic 1934 book *English Journey* and concluded that it was "a grim, craggy place". The poet Ted Hughes later disparagingly referred to "Black Halifax boiled in phosphorus"! Yet arguably the scene was best captured by the internationally acclaimed photographer Bill Brandt making his first visit to northern England in 1937. He chose to combine depictions of the railway with factory buildings covered in soot and skies darkened by smoke in a gloomy vision of Britain's industrial past. One of his most famous images depicts ragged children by the side of railway tracks close to North Bridge and the tall chimneys of Crossley's carpet mills.

Amid gloom and despondency there were still some memorable occasions, as instanced on 4th October 1936 when the station was blessed with full military pomp and 'Royal Scot' Class No.6145 was ceremoniously named *The Duke of Wellington's Regt. (West Riding)*. The Regiment was based in Halifax and its Colonel was aware that the London Midland & Scottish Railway was naming members of the class after what it considered to be famous fighting units having long-standing territorial links with the company. An approach was made and hence the locomotive lost its previously prosaic name of *Condor*. It was a timely gesture when both the footplate crew were ex- 'Dukes' soldiers who had been wounded in the Great War.

A remarkable feature in the late 1930s was the variety of through services from Halifax to four different London termini. Those who had the stamina to cope with a summer 1938 *Bradshaw* might have been beguiled by a 7.45am London & North Eastern Railway departure routed through Huddersfield, Penistone and over the Great Central main line to reach Marylebone at 1.10pm. Further study would reveal the folly of this choice, as a now forgotten LMS service left at 8.12am and journeyed via Huddersfield and Stockport to give an earlier arrival in Euston at 1.00pm. Those happy with a later start might prefer a fast LNER option at 9.20am travelling along the Calder Valley to Wakefield before terminating at King's Cross at 1.47pm. Finally, the LMS also offered the fastest of them all at 9.50am with a train to Sheffield Midland, where through coaches were attached on Mondays to Fridays to an express due into St. Pancras at 2.05pm. On Saturdays they formed part of a through working to Yarmouth via Nottingham and the Midland & Great Northern Joint.

A fascinating working in the opposite direction was the 4.45pm 'Yorkshire Pullman' from King's Cross, which comprised portions for Hull, Leeds, Bradford and Halifax. The last normally consisted of two carriages worked forward from Bradford via Queensbury, reputedly because the LMS would not allow Pullman cars on the direct line through Low Moor. The difficult 9½ miles were scheduled to be covered in 22 minutes including a stop at North Bridge. Bizarrely, there was no Pullman service in the reverse direction. Sceptics must have thought that a degree of luxury was required to get moneyed people to Halifax but they were then only too keen to leave the town by whatever service was available!

Recent times

There were few changes of any significance to railway facilities at Halifax in the years immediately following the Second World War and nationalisation. Although Sunday trains on the Queensbury lines had been withdrawn in December 1938, they continued to carry a respectable service to both Keighley and Bradford until a survey revealed annual losses of £49,000. The result was withdrawal of all passenger services on 23rd May 1955 followed by total closure between Holmfield and Queensbury on 28th May 1956. Goods traffic continued from North Bridge to Holmfield and over the High Level Railway to St. Paul's until 27th June 1960. An ongoing need to serve the yard at North Bridge meant this short stub out of Halifax survived until 1st April 1974.

Lines that had long lost their passenger services now saw total demise beginning with the Sowerby Bridge to Ripponden branch on 1st September 1958 (it had already closed as far as Rishworth in February 1953). This was followed on 14th September 1959 by the branch to Stainland from Greetland, where the junction station was closed to passengers on 10th September 1962. Station closures on the Bradford line out of Halifax were Hipperholme on 8th June 1953 and Lightcliffe on 14th June 1965.

This weary pattern of demise seemed to have no end, although one welcome step occurred in September 1951 when Halifax Old was given the more encouraging name of Halifax Town. It did not last, as the 1955 passenger closure of North Bridge meant there was no longer a possibility of confusion. From June 1961 the sole surviving station was known simply as Halifax. It was soon a shadow of its former self, reduced to just a single island platform with many of its buildings demolished.

The general decline was echoed in Halifax as a whole and it looked as if rock bottom had been reached in 1983 with closure of the once vast Dean Clough Mills at North Bridge. It proved to be a turning point, thanks to purchase by the visionary Ernest Hall. Inspired by the ideal of 'practical utopia', he soon transformed a redundant carpet factory into a major centre for business, education and the arts. By 1995 it was providing accommodation for some 200 companies and organisations employing around 3,000 people.

The success at Dean Clough brought changes to the railway not just in terms of increased traffic but also in fostering a new use for much of the now derelict station site. In July 1992 it became home to Eureka! – a pioneer interactive children's museum that within three years attracted its millionth visitor. The 1855 station buildings became part of the museum and in 1999 were impressively restored with clutter cleared away and the portico reconstructed. It made the neglected portion of the station still in rail use look even worse, prompting the *Courier* newspaper to echo its condemnation of 1855 in describing its state as "disgraceful" and demanding facilities "fit for the 21st century". Repairs finally began in 2009 to the footbridge and canopies, plus installation of new glazing and lighting, prior to a second phase embracing the platform and concourse.

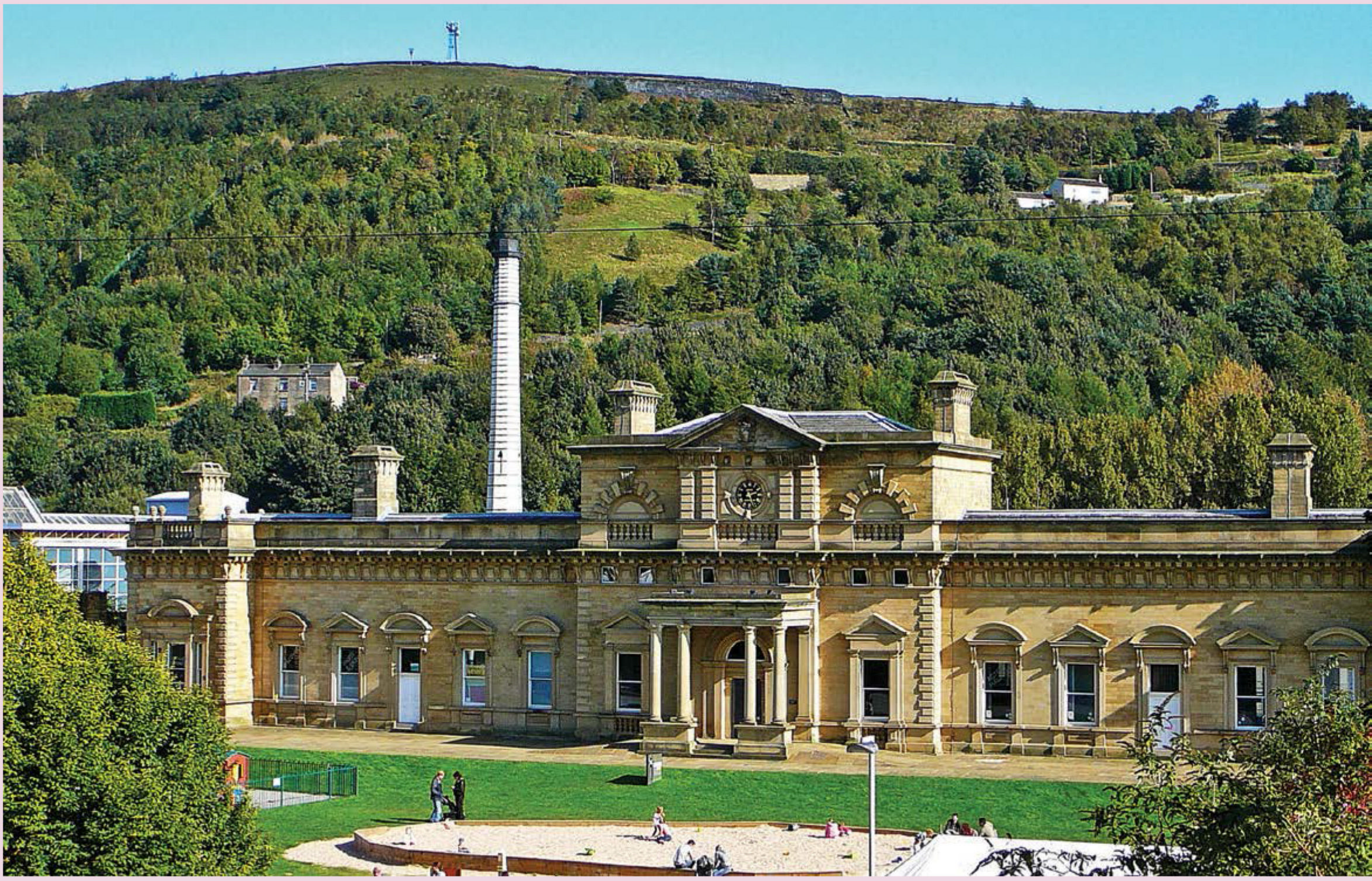
Improvement in train services has given five departures per hour to Bradford with four continuing to Leeds or beyond to York and Hull. Westbound there is a half-hourly service to Manchester throughout most of the day with one train an hour to Blackpool. The most welcome change came on 23rd May 2010 when Grand Central began to operate expresses from Bradford Interchange to King's Cross calling at Halifax and then taking only a few minutes over three hours to reach London after continuing down the Calder Valley via Wakefield. Worked by Class 180 units and well used, it is a journey time that has transformed links with the wider world and symbolises a town that has recovered its self-esteem.

Sources and acknowledgement

Much of the text derives from research when writing *A Regional History of the Railways of Great Britain: Vol 8 South and West Yorkshire* (2nd edition, 1984). An excellent general work is *Halifax: A history* by John A. Hargreaves (3rd edition, 2020).

Special thanks to Scott Flaving, Regimental Archivist of the Duke of Wellington's Regiment (West Riding), for clarifying the naming of 'Royal Scot' Class No.6145.

The Palladian-style station façade of 1855 was splendidly restored in 1999 as part of the museum project which created Eureka! Towering upwards is a preserved factory chimney, symbolic of the town's industrial past. (Tim Green)



The grand headquarters of the dimunitive Maryport & Carlisle Railway form the backdrop to this view of 2-4-0 No.19, taken after its renumbering to R1 in 1884. Fiercely independent, the company was by far the smallest to build any of its own locomotives, including No.19 in 1867, but like other small railways its demise was inevitable whatever the eventual outcome of the grouping process.
(Pendragon Collection)

Reluctance to break up large companies effectively guaranteed survival of the Great Western beyond the grouping. 'Star' Class 4-6-0 No.4058 *Princess Augusta* heads past Kensal Green Gas Works with a down express in a scene that epitomises continuity: introduced in 1906, the 'Stars' set the pattern for future express motive power which lasted to the end of steam while the familiar chocolate and cream coach livery, reintroduced in 1922, revived a scheme first adopted in broad gauge days.
(T. J. Edgington Collection)

SIXES AND SEVENS

THE 'BIG FOUR' AND THE ALTERNATIVES

Some thoughts by **RAY FISHER** on the background to the 'Railway Grouping' 100 years ago.

There was nothing inevitable in the creation of the' Big Four'. The only certainty after the centralised control of the First World War, with its benefits from the elimination of competition, was that there could be no return to the previous set-up. There was less agreement on what should replace it. One option, already mooted before 1914, was outright nationalisation, supported by many in political circles, including a certain Liberal Member of Parliament, one Winston Churchill. However, the Select Committee formed in 1918 merely reported that "unification of the railway system is desirable under certain safeguards, whether the ownership be in public or private hands." By 1920 the Coalition Government had swung away from nationalisation in favour of some form of consolidation under private ownership.

Responsibility for drawing up a plan fell mainly on the shoulders of the former Deputy General Manager of the North Eastern Railway, Sir Eric Geddes, who, newly appointed as Britain's first Minister of Transport, was charged with drafting the Railways Bill. In this he was assisted by the Railway Advisory Committee, with a membership including twelve general managers and four trade union general secretaries. Although wider in scope than the Grouping itself, the Bill's centrepiece was the new structure of the railways, where various options were considered.

Some early proposals

The ideal structure was envisaged as a set of local monopolies, with competition between

The London & North Western was the largest of the pre-grouping companies even before its merger with the Lancashire & Yorkshire in 1922 and under some plans might have survived the process like the Great Western. The (so-called) Doric Arch pre-dates the LNWR but its austere grandeur forms an appropriate gateway to 'The Premier Line', whose permanence, like the structure itself, must have seemed certain when this view was taken in the early 1900s. (Pendragon Collection)

the groups eliminated as far as possible. Understandably, competition was then perceived as confined within the industry rather than between road and rail. The existing North Eastern Railway, especially after its impending absorption of the Hull & Barnsley, best represented the model to be perpetuated elsewhere, with a dozen or so groups being formed in all. However,there was a problem with such a solution: some of the existing companies, notably the London & North Western Railway (about to be merged with the Lancashire & Yorkshire) and the Midland Railway, would have to be broken up, a process that would have prolonged any restructuring for some years.

The Committee therefore looked for more immediate solutions built on the existing companies though, as the Government stated in its 1920 Green Paper, it hoped the new groups would exchange lines "which project from the territory of one group into that of another", adding that "at a later stage it may become necessary to require them to do so". Whatever form it was to take, the grouping was thus seen as an interim measure to be improved by future adjustments, whether voluntary or imposed. So, you could argue, it proved to be, though neither the arrival of nationalisation nor the circumstances which gave rise to it were foreseen.

At one extreme grouping might have been confined to a tidying-up exercise where the twelve or so largest existing railways absorbed the minor ones, no new companies being created. Although the number of separate companies would have been greatly reduced, only about 7% of the locomotive stock might have changed ownership. This was soon dropped in favour of more radical schemes.

The constraint on breaking-up existing undertakings already effectively guaranteed the survival of the Great Western Railway and, unless a separate South Wales group was formed that excluded the GWR, its expansion was also inevitable as it increased its locomotive stock by almost 30% through absorption of the many smaller companies in its area.

Another constant element in the various plans soon emerged – the formation of a Southern group based on the merger of the three principal companies. Although barely half the size of what we could call the Greater Western Railway as measured by locomotives or route mileage, the Southern was of course much closer to the GWR in terms of assets and turnover.

Elsewhere plans were more fluid. One interesting scheme envisaged seven groups in all: Western, Southern, two groups in Scotland (east and west), an enlarged LNWR that took in the Furness and North Staffordshire as well as the LYR, an Eastern group comprising the NER, Great Northern and Great Eastern, and a Midland/Great Central group. The LNW group would have had 23% of the locomotive stock, the Eastern group 20%, the Midland 18%, the Western 17%, Southern 9%, West Scotland 7% and East Scotland 5%. A six group variant of the plan combined the two Scottish groups.

These proposals raise some interesting questions: would the Great Central have returned to its Manchester, Sheffield & Lincolnshire origins, its London extension run down by the Midland rather than by British Railways after Beeching? And on the LNW, would Crewe or Horwich have dominated locomotive affairs? I suspect the latter. Above all, with the Eastern group confined to three London termini*, what station would have replaced Marylebone on the Monopoly board? (* including Fenchurch Street which, despite the presence of the London, Tilbury & Southend Railway, was actually owned by the GER.)

The (not so Big) Seven

The proposal that finally emerged in the Government's discussion paper also had seven groups, but was quite different from the earlier scheme. The two Scottish groups were now merged while south of the border the Midland and Great Central were separated, with the Midland now joining the enlarged LNWR to form an LMS group without the 'S' and the GCR merging with the other two 'Greats', the GNR and GER. The NER was now hived off to form its own separate group, adding only the Hull & Barnsley, about to be absorbed by the NER before the grouping itself.

North British Class J 4-4-0 *Jingling Geordie* had become LNER D30 No.9421 when pictured on the Forth Bridge with an Edinburgh express on 15th July 1930. Doubts about the financial strength of the NBR was a key factor in the formation of both the LNER and the LMS. (George R. Grigs/Rail Archive Stephenson)

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41
METROPOLITAN
RICKETTS
RICKETTS

Beyer Peacock 4-4-2T No.41 is depicted in a rural setting as it stands at Quainton Road with a mixed train for Brill. The Metropolitan Railway had successfully resisted incorporation into the proposed London group in 1920 while also avoiding the clutches of the 'Big Four' in 1923, but when this view was taken in August 1935 it had been part of the London Passenger Transport Board for 25 months. (T. J. Edgington Collection)

Among these six groups, the North Western would now have 35% of the locomotive stock, the Eastern group 17%, the Scottish 12% and the North Eastern 9%, the GWR and SR still having 17% and 9% respectively.

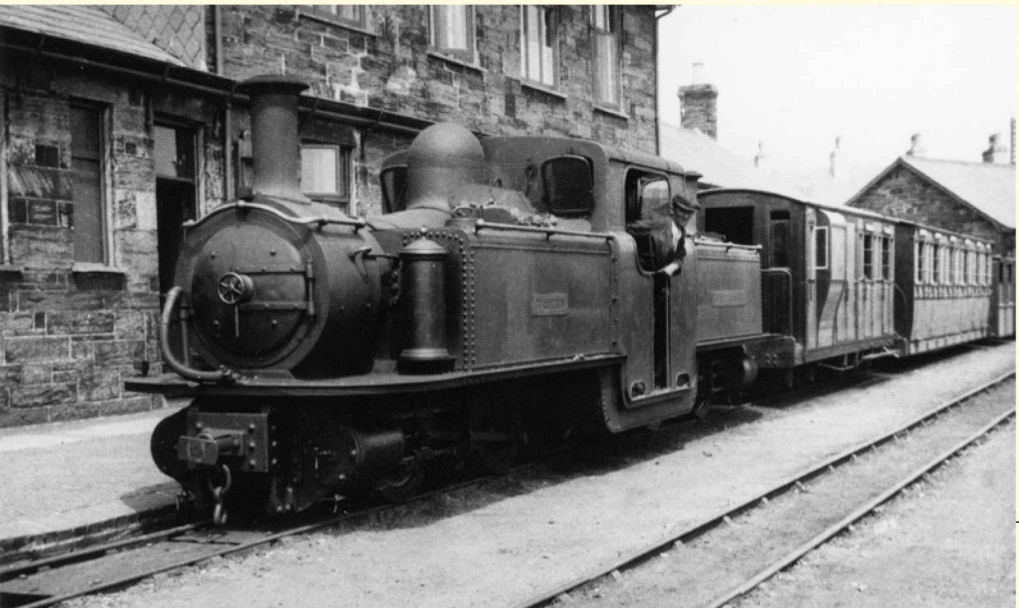
London and the grouping

The other big change in the new proposal was the addition of London as the seventh group. Intended to cover local railways, it would have included the North London, had its operations not been taken over by the LNWR in 1909, as well as, probably, the London, Tilbury & Southend if it hadn't been cheekily snatched by the Midland in 1912. Without these, the new group would have been limited to the lines already known as the 'Underground' – the tubes plus the two sub-surface lines. Here much of the grouping had already been done, for a holding company (a novelty this side of the Atlantic), the Underground Electric Railways of London Ltd. (UER), had by 1913 already absorbed all but the two shortest tube lines, along with the District Railway (or Metropolitan District Railway, to give its full and confusing title). The short tube lines omitted were the Waterloo & City Railway, taken over by the London & South Western Railway soon after completion, and the Great Northern & City Railway, a tube built to full loading gauge from Moorgate to Finsbury Park that had been grabbed by the Metropolitan Railway after being jilted by the Great Northern.

So only two companies needed to be merged to create the London group – but one of them was the Metropolitan, as fiercely proud and independent as any of the larger undertakings. Indeed, with a line that stretched over 50 miles from Baker Street until finally reaching Verney Junction, near Bletchley on the LNW's Oxford to Cambridge line, it saw itself as a main line railway. Even so, a merger with the District might have occurred had the latter not become associated via the UER with the toy trains scurrying deep below London's streets. Resistance from the Metropolitan won the day: by the time the Railways Bill itself was published, the proposal for a London group had been dropped.

A plan ahead of its time? If the grouping as finally implemented had substantial departures from the seven-group plan envisaged in the 1920 Green Paper, the discarded scheme may still look familiar. First, just ten years after the grouping a London group was indeed created, though not as a private company but in the form of the London Passenger Transport Board. Then, another fifteen years on, the new British Railways created six Regions that almost exactly replicated the 1920 scheme, with its separate Scottish and North Eastern Regions. Apart from the joint lines, omitted from the grouping plans but not from nationalisation, there was just one departure from the 1920 plan: the London Midland & Scottish lines in South Wales were placed under the Western Region and not the London Midland.

Largest of the narrow gauge railways, the Festiniog Railway might have been included in the grouping but in the event survived, unlike railways such as the Leek & Manifold, whose independence was more nominal than real. Double-ended Fairlie *Taliesin* has arrived at Portmadoc Harbour station in the 1930s. (T. J. Edgington Collection)



However, the effective revival of the Green Paper proposal was short-lived as subsequent Regional boundary adjustments progressively departed from it, one early change being the transfer of the LTS lines to the Eastern Region. Later the North Eastern Region itself disappeared, merged with the Eastern.

The 'Big Four' solution

Why wasn't the Green Paper's seven-group plan implemented? We have already noted the hesitancy over London and its eventual omission from the grouping. However, this would not have prevented implementation of a six-group version had there not also been concern over the financial viability of the Scottish group, where the Caledonian would have to support the weaker North British. Instead it was decided to link the NBR with its English neighbour, the North Eastern, one of the most profitable of all the pre-war companies. In turn this meant the railways of western Scotland, headed by the Caledonian, would also have to look south and join the English group that already comprised two giants, the LNWR and Midland. The London, Midland and Scottish was born, though the new company had yet to be named.

Now with 43% of the locomotive stock, the LMS threatened to dominate the other groups without an East Coast counterpart. The three 'Greats' would therefore have to combine with the NER/NBR group to form the future London & North Eastern Railway, with just over 30% of the stock.

The 'Big Four' had emerged, though some were bigger than others. On the map the new scheme perhaps looked a little messy in places, with former Midland and GC lines entangling with each other in central England, echoed by similar complexities in the Scottish lowlands. Potential competition remained on many routes, such as London to Plymouth, Birmingham, Manchester, Sheffield, Leeds and Edinburgh, while routes now to be served by a single company were often, though not always, similarly placed before the grouping, such as London to Southampton, Bristol, South Wales, York and Newcastle. But at the least the grouping minimised inter-company workings, including Anglo-Scottish services. Whether the arrangements were the best way of ensuring viability of each of the groups is another matter: the onset of the depression hit the North Eastern's territory as hard as any and the new LNER had to contend with the financial legacy of the Great Central's London Extension as well as support the North British.

We might wonder at this point whether a 'Big Five' solution with the Midland and Great Central in a separate group was a possible runner, perhaps with the inclusion of the Glasgow & South Western Railway a solution that would have avoided the conflicts north and south of the border in the new LMS as well as improving the LNER's finances, now relieved of the GC. However, this plan would have departed further from the original principle of local monopolies, widening the scope for potential competition.

That issue aside, one way in which the map could have been tidied a little would have been to assign the Great North of Scotland to the LMS, thereby removing its five interfaces with the Highland and simplifying matters in and around Aberdeen by confining LNER involvement to running powers north of Kinnaber Junction. This, however, would have meant a four-one split of the five Scottish companies, though making little difference to the share of assets.

The original Regional structure of British Railways in 1948 echoed the abandoned seven-group scheme of 1920, notably in bringing the Scottish railways together – an outcome nicely symbolised by this view pairing former LNER and LMS motive power as Great North of Scotland Class F 4-4-0 No.49 *Gordon Highlander* pilots the Highland's 'Jones Goods' 4-6-0 No.103 with an RCTS/SLS Special to Inverness on 14th June 1962. Tablet exchange is captured as they reach the passing loop at Slochd Summit.
(Trevor Owen/Colour-Rail.com 197739)

The ones that got away

Local lines: The Metropolitan might have considered it had a lucky escape from the grouping. Other local lines seem never to have been considered, notably the Glasgow Subway (the 4ft tube line then cable-operated) and two Merseyside railways, the Liverpool Overhead and the Mersey Railway (though its neighbour, the Wirral, was included).

Joint lines: Just as the grouping itself avoided the break-up of existing companies, so arrangements on joint railways were passed on intact to the new companies. In many cases, such as the March–Doncaster GN/GE joint line, this effectively ended their joint status, but not on the three biggest. The Midland & Great Northern and the Somerset & Dorset both kept their separate locomotive stocks, while on the Cheshire Lines the LNER inherited motive power responsibilities from the Great Central.

Narrow gauge lines: Another category generally excluded from the grouping was narrow gauge lines, unless they were part of larger concerns. Thus the Vale of Rheidol, absorbed by the Cambrian in 1913, was included, as were the Welshpool & Llanfair and Leek & Manifold, operated by the Cambrian and North Staffordshire respectively, though nominally independent. The most prominent of the excluded narrow gauge railways was probably the Festiniog; unlike smaller concerns such as the Talyllyn, it had come under the aegis of the Railway Executive Committee in 1914 and so its exclusion from the grouping may not have been a foregone conclusion.

Light railways: There seemed no consistent approach to the small independent railways, most built and operated under the Light Railway Act 1896, which reduced construction costs by lowering standards while imposing speed and weight restrictions. While many were absorbed by the new companies, some escaped their clutches, including the North Sunderland (Seahouses to Chathill), the Weston, Clevedon, & Portishead, the East Kent and the Kent & East Sussex. All but the first of these were managed by Lt.-Col. Stephens, a prominent figure in this somewhat specialised world of light railways.

Now, some of us collect engine numbers (I've got two), some whole locomotives, though our wives rarely allow them in the house, but Lt.-Col. Stephens went right up to the buffers and collected whole railways, some of them built by himself. Of course, he didn't actually own them but as locomotive superintendent or managing director or whatever (he was a civil engineer) he seems to have acted as if he did. Managing some sixteen railways from an unostentatious office in Tonbridge, he was undoubtedly instrumental in protecting some of them from the grouping (including, perhaps, the Festiniog) and so ensuring the 'Big Four' weren't quite as big as they might have been.

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C. Awdry, *Encyclopedia of British Railway Companies,* Guild Publishing 1990

Readers' Forum

Letters intended for publication should ideally add extra detail to our articles (or offer corrections of course!) and not be too long, consistent with the detail they offer. As always, we are sorry that space and time prevent us from printing them all or sending personal replies. ED.

North British Atlantics

I read with interest your article on the North British Atlantics (February), made particularly interesting by the colourised photographs supporting the text. These are locomotives that have always intrigued me, since I first read about them, as they are so unlike anything else produced by the North British Railway. As a class they are unique, being the only NBR class with:

1 .A Belpaire firebox: all their other locomotives had round top boilers,

2. A two side window cab: all the other classes have the NB distinctive single side window cab.

3 .Outside cylinders: all its other locomotives have inside cylinders.

4. Even the driving wheel diameter was non-standard at 6ft 9in in contrast to the NBR standard diameter by then of 6ft 6in.

Completely different from the other work of W. P. Reid, to whom they are attributed, or his predecessor Matthew Holmes.

The RCTS Locomotives of the LNER suggests that they may have been influenced by the Great Central Railway Atlantics (LNER Class C4) as the North British Loco Co., had built twelve of those engines in 1905 at its Hyde Park Works, and it built the NBR Atlantics. Was there collusion between the respective design offices? Did the The North British Loco Co. supply copies of the Great Central's drawings as an expedient to get the design prepared quickly, as there was a need to have these locomotives into service as soon as possible.

Certainly there is a number of GCR features in these locomotives, which had outside cylinders, Belpaire boilers, 6ft 6in driving wheels, which is a GCR standard, the wheel spacing was exactly the same as that on the GCR Atlantics, the footplate seems to be the same shape, including the reverse curve behind the cylinders.

Can anyone else throw light on these intriguing locomotives? Did the GCR receive a fee for the use of its design. Was the North British Loco Co. able to use any patterns or tools used in the making of the GCR locomotives in the building of the NBR Locomotives?

Bill Dickinson, Uley, Glos.

I refer to the above article and note an error on p82 whereby the NBR suffered one of its worst accidents at Laurencekirk on 27th December 1906. This gives reference to the section of line between Arbroath and Montrose alluded to in the previous sentence of damaged track. I know of no such accident at this location in that time period but there was the serious accident on 28th December of that year at Elliot Junction, south of Arbroath, coming about in the manner described, a rear end collision during a snowstorm. Am I correct in this assumption and quite probably others will comment likewise?

John Macnab, Falkirk

Birkenhead Woodside

Aa a devotee of Birkenhead Woodside station, I enjoyed Dr. Michael Yardley's articlein the February issue. Some additional information about p75. The back working of the 7.08 from Llandudno to Woodside was the 4.30pm Liverpool Lime Street to Llandudno 'Club' train. Page 76: the 7.08 from Bala to Woodside ran for the last time on Saturday 12th December 1964 as the line was severed that night east of Bala Junction. Whilst the Michael is right to say Paddington trains ceased from Sunday 5th March 1967, the service officially did not end till the arrival of the Sunday evening 21.40 Woodside to Paddington at 04.35 on the Monday morning 6th March at Paddington. From 6th March 1967 the through trains from Woodside were the 07.35 Woodside to Liverpool Lime Street and the 10.10 to Rhyl (12th June to 2nd September). Return through trains were the 06.10 Ditton Junction to Woodside and the 18.45 Llandudno to Woodside.(12th June to 1st September). It is interesting to note that Woodside and Paddington train crews worked throughout till the end of the service following a GWR tradition. The last steam-hauled passenger trains from Woodside were the Chester Races specials in May 1967. Whilst Dr. Yardley's text does not included what happened after the Woodside closure; people still feel angry as to what the LMR did to eradicate the Paddington to Woodside service. There was no TUCC enquiry, connections were severed at Chester, Shrewsbury, Wolverhampton and Birmingham. There has never been a Shrewsbury to Birkenhead service since March 1967. For those having to use the route the LMR did everything possible to inconvenience them. For example, Wrexham to Banbury, once a through service, was replaced by two or three changes. To ensure that never again could the Paddington to Shrewsbury and Birkenhead route would continue in some form, in March 1968 the lines into Birmingham Snow Hill and Wolverhampton Low Level were broken up. In the 1850s Captain Mark Huish of the LNWR did everything in his power to stop the GWR reaching Birkenhead. At the time he lost but he won in 1967.

Chris Magner, by email

Suburban Surbiton

The caption to the splendid view of No.73113 on the 6.37am Basingstoke–Waterloo refers to the locomotive hurring the train through. In fact it is restarting from a booked stop. This train was all stations from Basingstoke to Woking then calling at Weybridge, Surbiton and New Malden before arriving at Waterloo at 8.08am. The leaking steam at the side of the locomotive is something of a giveaway. It was workings such as this that used to make the railways so interesting!

Laurence Akehurst, Watford

Britain: locomotive workshop to the world

In his letter on British exports of locomotives (February 2023), Stephen Spark identifies the Crown Agents as a possible reason for a 'buy British policy' that favoured British private manufacturers in the colonial purchases of locomotives. Additional factors relating to India has been suggested by Shashi Tharoor in his book Inglorious Empire: What the British Did to India (Hurst 2016)*.

Tharoor suggests that between 1885 and 1947 India imported 10%, 14,440 engines, of all British locomotive production. Given john Busby's (January 2023) observation on the small output of private companies compared to that of the railway companies, this must have been a much higher percentage of the output of former. Tharoor explores possible reasons for this high level of Indian imports, which he suggests occurred despite locally built locomotives "being just as good as and a great deal cheaper than British made ones". He further suggests that a key factor was that in 1912 "the British passed an Act of Parliament explicitly making it impossible to design and manufacture locomotives" in India.

It is unclear from my reading whether the 1912 Act was part of what Tharoor describes as British attempts to "exclude imports of cheaper continental steel from the colonial Indian market". Tharoor suggest sthat an element of this policy was the insistence of the Government and the railways that only the higher quality, and more expensive, British Standard Specification Steel be used for most purposes, rather than the cheaper Non British Standard Specification Steel "used by most of the rest of the world". Tharoor's remarks that Indian steelmakers were "required by law" to produce BSSS steel and "could not simultaneously produce NBSSS steel", are used to support his suggestion that Government constraints on Indian steelmakers "rendered Indian steel uncompetitive" and resulted in there being no local source of BSSS steel available to potential local manufacturers of locomotives.

I am not competent to judge the validity of Tharoor's analysis, but it does imply that the scale of British exports to the then colonies could sometimes have been influenced by factors additional to what happened in British workshops.

*The quotes come from pp33 and 181 of the Penguin reprint of 2017

John Harvey, Cheletenham

Chessington memories

The two-coach electric units recalled by Michael Baker on the West Croydon to Wimbledon service (February) were not converted from Brighton line express stock. They had been built for the LBSCR South London line electrification on the ac overhead system in 1909 and were converted to dc third rail after the Southern Railway abandoned overhead electrification in 1928-29. The vehicles had internal side corridors as built, but no inter-car gangways.

The demise of the EPBs in 1995 may have marked the end of slam door stock on most Southern inner-suburban services, but four-car slam door CEPs, CIGs and VEPs continued in widespread use on outer suburban and main line trains, plus a few inner suburban fill-in turns, until replaced by new stock between 2002 and 2005. The last suburban working was the 08.17 Bromley South–Blackfriars on Friday 30th September 2005 and the last main line slam door train the 11.06 Victoria–Brighton on Saturday 26th November.formed of 4-VEPs No.3535 + 3505 + 3490. Even that was not quite the end, as by special derogation from the ban on slam door stock after 31st December 2005, two 3-CIG units remained in use on the Brockenhurst–Lymington Pier branch until 2010.

Stephen G. Abbott, Skipton

Book Reviews

|★★★★★ Excellent|★★★★ Very Good|★★★ Good|★★ Fair|★ Poor|

The St. Ives Branch Line - A History

By Richard C. Long. Published by Pen & Sword Books, 182 pages, hardback, 123 illustration. £30.00. ISBN 978-1-39900-200-4

I have always enjoyed travelling on the St. Ives branch. It has a long history, including broad gauge days, it is scenically splendid, and has a long tradition as one of the GWR's most popular holiday destinations. An authoritative book on it is long overdue. However, I found that this volume illustrates some of the difficulties in presenting a branch history when a line is still in working existence, as an author strives to achieve an appropriate balance between, for instance, steam days and the modern dieselised era. It can be especially problematical if the research involved is a relatively recent activity.

Enthusiasts familiar with the comprehensive nature of Wild Swan and Lightmoor branch histories will quickly notice a rather different approach here. More than half the volume relates to the line from Beeching onwards. Its imbalance is reflected in the 30 pages (one-sixth of the book) accorded to the chapter on 'the privatisation era' with only eleven on building the railway and sixteen on the early years. There are many pages solely of text early on and there are ways of avoiding this which do not appear to have been explored. It can also be a tiring read when the text is full-page width in a book of this size, rather than the two-column layout normally employed. There is an awkward chronology present when you have photographs from 1920 and 2019 appearing on adjacent pages, and when reading information from Victorian times amid the distraction of modern colour photographs.

I find it very unsatisfactory that a publisher would put out a branch history without the use of timetables, signalling diagrams, architectural drawings, locomotive allocations (St. Ives had its own engine shed) and close-up views of structural features. The only traffic figures used cover the years 2001-2019 – such statistics are available at Kew going back to 1903. Little use is made of maps and there is just one station track plan included, for St. Ives in 1914. In sharp contrast, there are many 'samey' full-frontal views of diesel units at work on the line.

I sadly found no evidence of seeking out railway staff past and present, and folk who remember the line in its heyday, via interviews which could have given the work a more 'human' feel. Most of the best branch line histories explore this angle very fully. Similarly, the section on camping coaches would have benefited from finding folk who used this holiday facility in the '50s, whose contributions could have really brought this subject to life.

Positives? Well, there's a very good account of the difficulties of the 'railway politics' period on the travails of bringing the railway to St. Ives. There is an excellent chapter on 'The Impact of Tourism', well-written and especially relevant to this line, supported by a range of period photographs and GWR posters. Some beautiful colour photographs by the late Peter Gray enhance the work and the coverage of the last years of steam.

In my view the approach is more suited to folk with a general interest in St. Ives history rather than serious railway enthusiasts. It could make a useful companion for anyone wishing to explore the line today, in tandem with an OS map. But considering the importance and longevity of the branch many will feel there are some missed opportunities here.

★★ **MF**

Robinson Eight-Coupled Locomotives

By Jeremy Clements, published by Crecy Publishing Ltd. Hardback, 224 pages, £25.00. ISBN978-1-91080-968-6

This publisher is carving out for itself a well-deserved niche, delivering books which add considerably to our store of railway knowledge whilst at the same time being most stylishly produced. And this is the latest offering which could be considered under the sub-title 'all that you wished you knew about Mr. Robinson's big goods engines – but were rather reluctant to ask'!

Production values aside, the author has set about his subject in a most comprehensive and authoritative style. Context is the key to the first part of the book, links between personalities in the railway industry, noticeably in this case between the 'mainland' and Ireland are considered along with the productive relationship subsequently enjoyed by J. G. Robinson and Sir Sam Fay during their tenures on the Great Central. The basic reason for building 'big goods' engines is pertinently tackled in a chapter on freight train working and, in the interests of clarity, the vexed matter of locomotive numbering – and serial renumbering! – is considered.

The meat of the book starts with the 0-8-0s, the 'Tinies', progresses through the three-cylinder 0-8-4 shuntng tanks, the delightfully nicknamed 'Wath Daisies', and finishes up with the immortal 2-8-0s, the GC Class 8K. This section on the 2-8-0s considers the various modifications which were made to the locomotives, their service during both World Wars and their dispersal and disposal after the Great War. As the majority of the locomotives spent their latter years on the LNER and its successor, the modifications made by Gresley and Thompson are detailed. The consideration of the problem of banking trains up the Worsborough incline throws up fascinating insights into possible American imports or a Great Central Garratt, the massive LNER Class U1 being adopted as the final solution. The well-known antipodean '8Ks' get several deserved mentions but GC 2-8-0s in Egypt Palestine and Iraq? – quite a revelation to your reviewer and a splendid example of how wide the scope of this book is thrown.

The book is pertinently illustrated, indeed the last chapter, 'Final Years' ,is largely pictorial. The pictures are well-supported by engineering drawings and statistical tables which all add to the quantity of relevant information on offer.

The book is blessed with a useful bibliography and index and an absolute plethora of appendices and 'digests'. The appendices cover such diverse subjects as Railway Operating Division motive power, annual totals of eight-coupled tender locomotives on the LNER, the Robinson superheater, overseas experience of Gresley conjugated valve gear and the locomotives which finished up on the Richmond Vale Railway in New South Wales.

The 12 'digests' start with J. G. Robinson's designs for the Waterford, Limerick & Western Railway before tackling the individual eight-coupled locomotives through GC, LNER and BR day as well as their time with the Railway Operating Division. To say that these 'digests' are comprehensive is probably not to do them justice!

'Back in the day', when such things were possible, your reviewer recalls a conversation with a retired BR footplateman. Talk turned to the Robinson 2-8-0s, "Splendid engines" said the man in the know, "to anywhere, pull anything – just as long as you don't want to go much more than 25 miles an hour!"

This is a superb book which does complete justice to a fascinating subject. It comes most highly recommended.

★★★★★ **DWM**

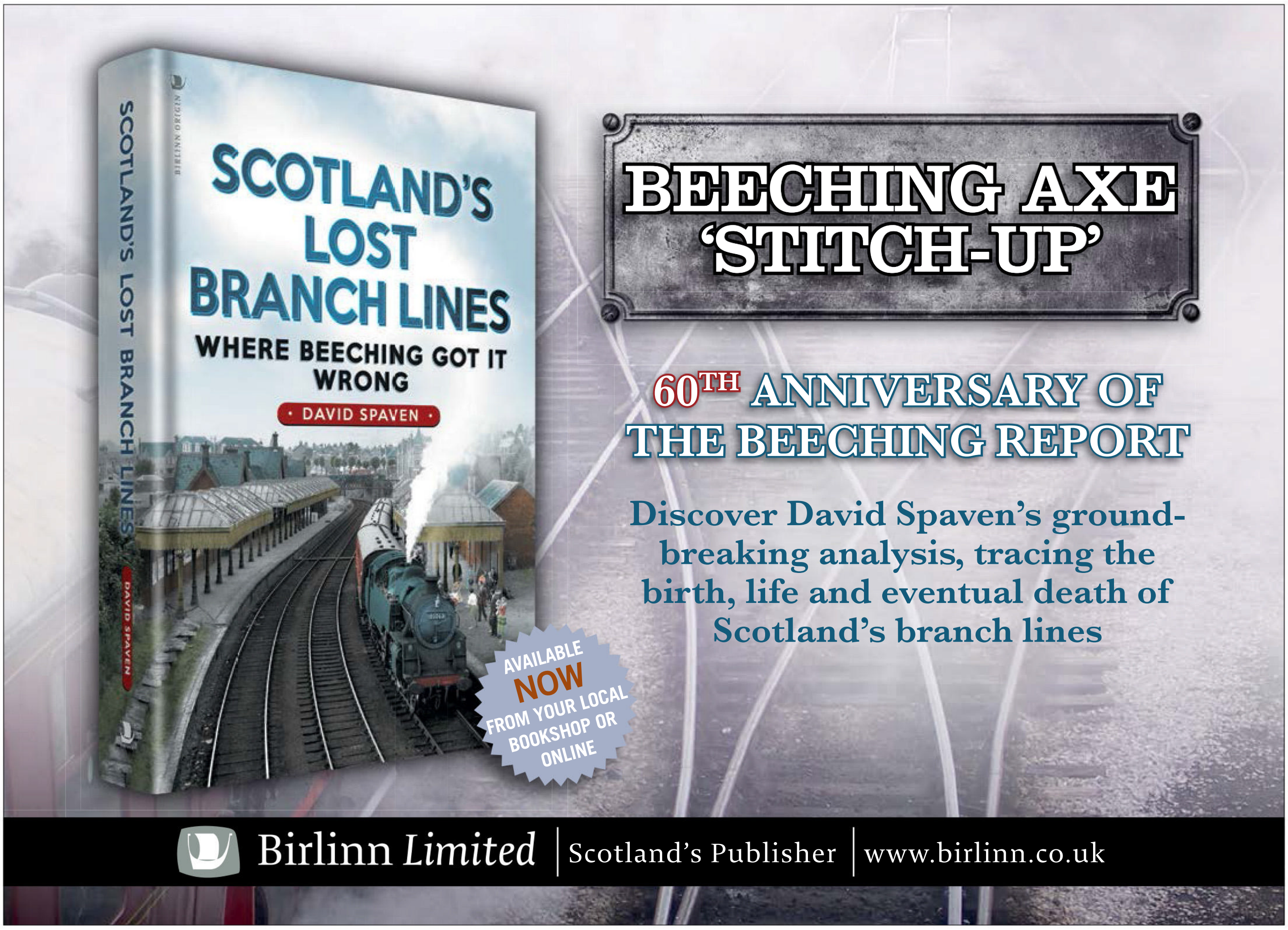
Scottish Steam 1948-1967

By Peter Tuffrey. Published by Great Northern, hardback, 160 pages, £19.99. ISBN: 978-1-914227-21-9

This is a nicely produced and competitively-priced album of British Railways steam era in Scotland. A catholic selection of motive power is featured and the photographs themselves are an attractive mixture of colour and monochrome. As with previous albums from this publisher the captions to the photographs are fairly basic. The album gives an alphabetical tour around Scotland, some obscure locations, Back o'Loch Halt, Greenloaning, Hamiltonhill and Throsk contrast nicely with more the more well-known Polmadie, Haymarket or Inverkeithing. A map indicating the position of many of the photographic locations would have been useful.

For those enthused by the last decades of steam north of the Border, this may be a 'must have' book – but does it add a great deal, other than a number of interesting photographs, to our general knowledge or appreciation of the subject....

★★ **DWM**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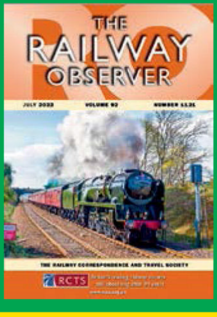

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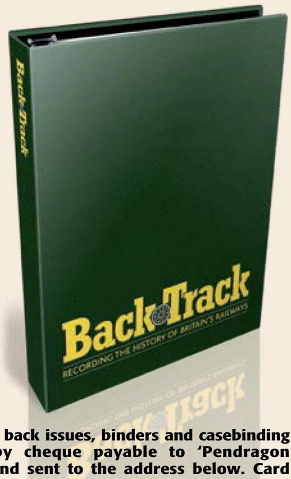

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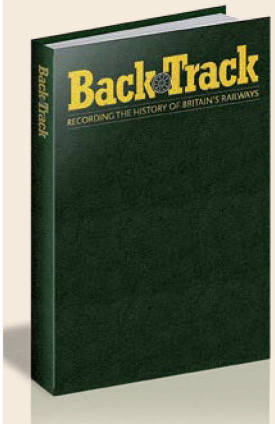

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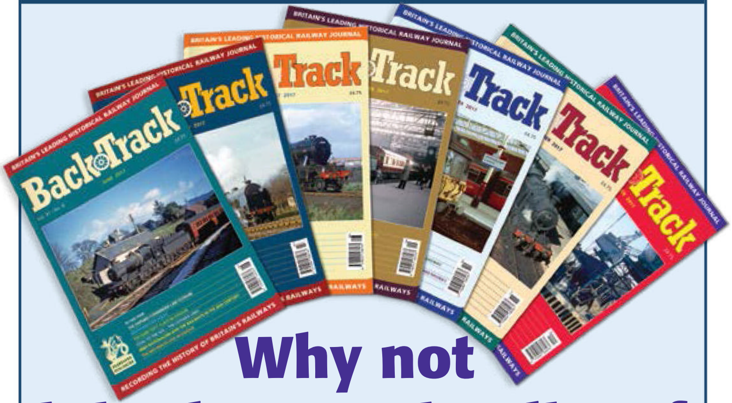

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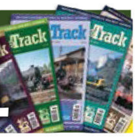

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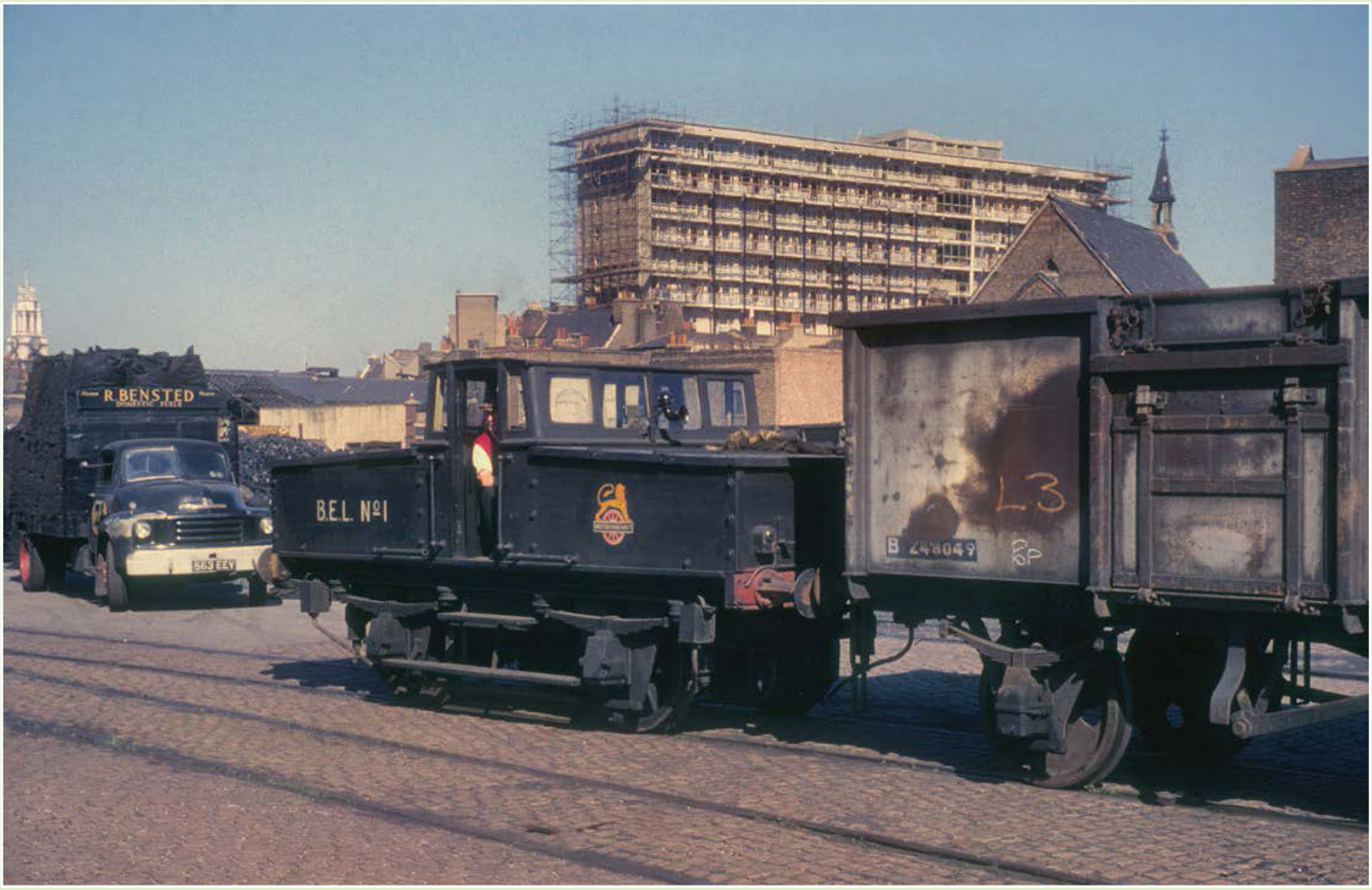

THE COAL MAN COMETH

Departmental and internal service locomotives often worked in relative obscurity, largely unseen by the public, though a few – such as the subject of our front cover photograph – enjoyed a more prominent role with perhaps a paint scheme to match it. In the former category was the battery electric locomotive No.B.E.L.1, built by the Midland Railway at Derby in 1913 to work its coal depot at the West India Dock, Poplar. The depot had no direct rail access and wagons were transferred to and from the yard by hydraulic hoist. This dictated the size and weight of the shunting engine which also had to use the hoist when being taken for maintenance. It lasted there until 1964. Mr. Bensted's coal lorry has been well loaded for its delivery round and in the background a new tower block of streets in the sky is on the way towards completion.

(Harry Luff/Online Transport Archive)

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